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MACKENZIE VALLEY PIPELINE INQUIRY

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IN THE MATTER OF APPLICATIONS BY EACH OF  
(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A  
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS  
CROWN LANDS WITHIN THE YUKON TERRITORY AND  
THE NORTHWEST TERRITORIES; and  
(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY  
THAT MIGHT BE GRANTED ACROSS CROWN LANDS  
WITHIN THE NORTHWEST TERRITORIES,  
FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND  
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,  
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE  
PROPOSED PIPELINE

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

August 20, 1975.

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PROCEEDINGS AT INQUIRY

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Volume 58

347  
M835  
Vol. 58

CANADIAN ARCTIC  
GAS STUDY LTD.

AUG 25 1975

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APPEARANCES:

Mr. Ian G. Scott, Q.C.  
Mr. Stephen T. Goudge,  
Mr. Alick Ryder and  
Mr. Ian Roland for Mackenzie Valley  
Pipeline Inquiry;

Mr. D. M. Goldie, Q.C.  
Mr. Jack Marshall,  
Mr. Darryl Carter, and  
Mr. John Steeves for Canadian Arctic Gas  
Pipeline Limited;

Mr. Reginald Gibbs, Q.C.  
Mr. Alan Hollingworth for Foothills Pipelines  
Ltd.;

Mr. Russell Anthony,  
Prof. Alastair Lucas for Canadian Arctic  
Resources Committee;

Mr. Glen W. Bell and  
Mr. Gerry Sutton for Northwest Territories  
Indian Brotherhood and  
Metis Association of the  
Northwest Territories;

Ms. Leslie Lane for Inuit Tapirisat of  
Canada and the  
Committee for Original  
Peoples' Entitlement;

Mr. Ron Veale and  
Mr. Allen Lueck for the council for the  
Yukon Indians

Mr. Carson H. Templeton for Environment Protect-  
ion Board;

Mr. David Reesor for Northwest Territories  
Association of Muni-  
cipalities

Mr. Murray Sigler for Northwest Territories  
Chamber of Commerce

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S.R. Blair  
Cross-Exam by Goldie

Yellowknife, N.W.T.

August 20, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

THE COMMISSIONER: Mr. Goldie,  
I think you're still at work.

MR. GOLDIE: Yes. Thank you,  
Mr. Commissioner.

S. R. BLAIR, resumed:

MR. GOLDIE: I informed my  
friend, Mr. Gibbs, that I would be working from Exhibit  
54, which is Section 8, location, design, and capacity  
of facilities of the Canadian Arctic Gas submission,  
and that was part of the filing that was made in March  
of 1974, Mr. Commissioner.

CROSS-EXAMINATION BY MR. GOLDIE:

Q Mr. Blair, do you have that  
in front of you now?

A Yes, I've been given that.

Q I wonder if you'd turn  
to the first red tab, 8-B, "design and capacity"?

A Right.

Q And then under that, the  
first white tab marked .1, headed:

"Summary of projected gas volumes by year."

A Yes.

Q And if you turn over the  
page there is Table 1, "Projected average day gas  
volumes." Is that the table you have in front of you?

A Yes.



S.R. Blair  
Cross-Exam by Goldie

1 Q Would you look, please,  
2 at the first line, which shows Prudhoe Bay supply, and  
3 then there are five columns under the general heading,  
4 "Operating year",  
5 Under year 1 there is no supply from Prudhoe Bay, and  
6 you would understand that to mean there was no through-  
7 put from Alaska contemplated in that operating year,  
8 would you?

9 A Yes.

10 Q And then year 2 shows  
11 2,000 mmcf. per day, which is 2 Bcf. a day. Would  
12 you agree with that?

13 A Yes.

14 Q And that's in operating  
15 year 3, the same throughput of 2 Bcf., year 4 it  
16 increases to 2 1/4, and year 5, 2 1/4. That indicates  
17 in those five operating years an increase in the  
18 Alaska throughput from zero in year 1 to 2 Bcf. in  
19 year 2, 2 Bcf. in year 3, 2 1/4 Bcf. in year 4, and  
20 2 1/4 Bcf. in year 5. Would you agree with that?

21 A Well, yes, it does.

22 Q Yes. Now would you drop  
23 down to the next main section which is headed:

24 "Richards Island to Travilliant Lake."

25 And in year 1 it shows Richards Island supply, 875 mmcf.  
26 per day, and you would understand that to be 875,000  
27 Mcf. a day. Would you agree with that?

28 A Yes.

29 Q And then that is -- the  
30 same throughput is set out for year 2, and then in year



S.R. Blair  
Cross-Exam by Goldie

1 3 it increases to 1,050; year 4 it increases to 1.225  
2 Bcf., and in year 5 to 1.575; and then if you look at  
3 the next line which is downstream supply, you under-  
4 stand that to be what, from Parsons Lake?

5 A Well, if you say so, yes.  
6 It just says, "downstream supply".

7 Q All right. Well then if  
8 you go down to the last line on that sub-section,  
9 which shows -- second to last line, there's Travaillant  
10 Lake delivery that shows 1 1/4 Bcf. in operating  
11 year, and you would understand that to mean the through-  
12 put from the Mackenzie Delta or Beaufort Basin, as we  
13 call it from time to time, supply area to the pipeline.  
14 Do you understand that?

15 A Well yes, it appears to  
16 be that.

17 Q So that in the first year  
18 you have 1 1/4 Bcf. from the Canadian section, and  
19 1 1/4 in year 2, increasing to 1.5, increasing to 1 3/4'  
20 and finally increasing to 2.25, which is the same.  
21 That would give you a 4.5 Bcf. in the mainline, would  
22 you agree with that?

23 A O.K.

24 Q Now, does that not  
25 indicate to you that at the time of filing in March  
26 of 1974 the applicant or the application contemplated  
27 a throughput of 3 1/4 Bcf. by the second year?  
28  
29  
30



1 A I don't know if this  
2 volume was filed in March of 1974.

3 Q Yes, I can state as  
4 counsel that it was.

5 A Well, then it would say  
6 what it says.

7 Q Yes. Well, now, maybe  
8 not you personally, but your company would be  
9 aware then that the contemplated volume of throughput  
10 of this line would be by the second operating year  
11 the figure that we were speaking about yesterday,  
12 namely three and a quarter b.c.f. a day.

13 A Well, it is the  
14 same figure, it is not the way you were describing  
15 it yesterday --

16 Q Well, let us work from  
17 this table alone so that we are keeping in step with  
18 one another and --

19 MR. GIBBS: Mr. Blair should  
20 be allowed to say the basis upon which he understood  
21 yesterday's questions to be related to this 3 1/4,  
22 and not the basis upon which my friend is putting  
23 it this morning.

24 MR. GOLDIE: I am sorry,  
25 I didn't hear what my friend's objection was in  
26 full.

27 MR. GIBBS: Mr. Blair was about  
28 to say why this was different than the line of  
29 questioning my friend was putting when we adjourned  
30 last night and I think that he ought to be allowed



S.R. Blair  
Cross-Exam by Goldie

1 to say that this is now a different point he is  
2 making. He is not on the line that he finished with  
3 last night.

4 MR. GOLDIE: Well, I am not  
5 sure that I have got to any point yet, Mr. Commissioner.  
6 All I wanted to do was to insure that Mr. Blair had  
7 the same data before him now as I have because it  
8 seemed to me that yesterday we were confronted with  
9 the very problem that my friend refers to that Mr.  
10 Blair had the one thing in mind and I had another.

11 MR. GIBBS: Well, no,  
12 sir.

13 MR. GOLDIE: I just want  
14 to insure at this point so far we are at one.

15 MR. GIBBS: No, sir, last  
16 night, and the transcript will show this, when  
17 we adjourned, my friend Mr. Goldie was going on the  
18 basis that there was a base case of 3 1/4 billion  
19 cubic feet a day and he was working from a different  
20 exhibit, one that was filed in November of '74 after  
21 Alberta Gas Trunk had withdrawn.

22 Now, he comes back to a  
23 different exhibit this morning and instead of talking  
24 about a base case of 3 1/4 billion cubic feet a  
25 day he is talking about one of the years during  
26 the buildup period, so he is on a different ground  
27 than he was last night.

28 THE COMMISSIONER: Well, he  
29 made that point. Surely that enables us to go on  
30 then.



1 MR. GOLDIE: I appreciate  
2 the point that you were getting at yesterday, Mr.  
3 Blair, and this is why I want to, as I say, insure  
4 that we are on common ground today and this is  
5 why I have directed your attention to this  
6 particular exhibit. I can, for the benefit of my  
7 friend, co-relate the two exhibits, one which was  
8 filed in November of 1974 and one which was filed in  
9 March because they are consistent, but just taking  
10 the one that is before you now, that was filed in  
11 March of 1974, wouldn't you agree with me that there  
12 was contemplated there a system which had for its  
13 second year throughput, 3 1/4 b.c.f. a day?

14 A Well, yes, that is what  
15 the printed material shows.

16 Q Right, and wasn't that  
17 level of throughput one that your company was aware  
18 of at the time?

19 A I suppose it was.

20 Q And indeed wasn't that level  
21 of throughput one which had been developed and  
22 accepted within the study group sometime prior to  
23 the filing which was in March of 1974.

24

25

26

27

28

29

30



S.R. Blair  
Cross-Exam by Goldie

1 A I don't know.

2 Q Now, my recollection is  
3 that at least yesterday we got to the point where you  
4 agreed that a throughput of 3 1/4 Bcf. a day through  
5 Alberta would require virtually the complete looping  
6 of the AGTL system.

7 A Yes, including those  
8 segments, the acquisition of segments of loop that  
9 had been installed in prior years.

10 Q Well, let me put it  
11 another way. In order to accept that level of through-  
12 put, namely 875,000 Mcf. a day in the first operating  
13 year going to 3 1/4 Bcf. a year in the second operating  
14 year, is not or calls for virtually a completely new  
15 system.

16 A No, I don't know that  
17 that is so.

18 Q Well --

19 A I doubt that that is so.

20 Q Well, as a general  
21 proposition the incremental approach, that is to say,  
22 of looping and adding to an existing system is  
23 better suited to a low volume gradual buildup. Would  
24 you agree with that as a general proposition?

25 A Yes.

26 Q And the only case that  
27 really fits that principle is the delta only line.

28 A No, I don't think that's  
29 necessarily true.

30 Q I'll put it another way,



S.R. Blair  
Cross-Exam by Goldie

1 that the better approach to a system required to  
2 accommodate 3 1/4 Bcf. a day in the second year of  
3 operation is to build a new system.

4 A No, I don't agree that  
5 that's so.

6 THE COMMISSIONER: What was  
7 your question just prior to the last question? Could  
8 you repeat it for me?

9 MR. GOLDIE: The question,  
10 Mr. Commissioner, before that was with the case that  
11 best fits the incremental approach, which is --

12 THE COMMISSIONER: Gradual  
13 buildup.

14 MR. GOLDIE: -- gradual buildup.  
15 The only case that fits that, really, is a delta only  
16 gas supply system.

17 Q Your answer to my last  
18 question, which you said you did not agree with the  
19 proposition that the best approach to the problem of  
20 carrying gas volumes starting at 875,000 cubic feet  
21 a day in year one and rising to -- sorry, I use the  
22 word "875", that's the Richards supply -- its 1 1/4  
23 Bcf. a day in year 1, rising to 3 1/4 in year 2, and  
24 I suggested to you the best approach to that was the  
25 construction of a new system and you disagreed with  
26 me. I suggest to you that your answer was based on  
27 the premise that there would be very substantial spare  
28 capacity created in the AGTL system by the time that  
29 demand was laid on, am I right in that?  
30



S.R. Blair  
Cross-Exam by Goldie

1 A Well, in part, and on  
2 the premise that it is always better to build on what  
3 you have than to bypass it, and in part duplicate it  
4 with a wholly new system.

5 Q Yes, I --

6 A That's the general premise  
7 of pipelining.

8 Q Yes, I understand that  
9 general premise, but I'm asking you to apply your  
10 mind to the situation which is depicted in that table,  
11 namely, a throughput in the first year of operation  
12 of 1 1/4 rising to 3 1/4 in year 2, and I'm suggesting  
13 to you that your answer with respect to the capacity  
14 of AGTL to accommodate that assumes the creation of  
15 substantial spare capacity between now and the date of  
16 the first delivery.

17 A Well yes, that's part  
18 of the basis for my answer, but by no means the whole  
19 basis.

20 Q Well, it is the substantial  
21 basis for your answer, isn't it?

22 A No.

23 Q Well, what is the sub-  
24 stantial basis for your answer then?

25 A Well, what I've said is  
26 I think there are definite advantages to building on  
27 what you have in place.

28 Q That is to say that there  
29 are advantages to building a new system which has  
30 some link with an existing system.



S.R. Blair  
Cross-Exam by Goldie

1 A No, I'm saying there are  
2 advantages to expanding an existing system.

3 Q Well, expanding an exist-  
4 ing system by a complete looping is the equivalent of  
5 a new system, isn't it?

6 A No, not entirely. I think  
7 they're different procedures.

8 THE COMMISSIONER: Can you  
9 loop along a given and limited length of a pipeline and  
10 then loop another part of it in the following year and  
11 so forth, and still make use of each loop as it is  
12 completed?

13 A Yes, exactly, and by  
14 doing that you only put in in a given year what you  
15 are sure you'll need for the following year, and you  
16 reserve the decision of how much capacity to put in  
17 for the next year.

18 Q And construction can be  
19 gradual and not urgent, so to speak?

20 A Yes, it spreads out the  
21 construction over a longer period, and it's more  
22 manageable and it's the customary method of expansion  
23 of all gas pipelines.

24 Q Excuse me, when you say  
25 looping is preferable, you're really speaking of the  
26 advantages we've just discussed?

27 A Yes, and also the  
28 advantages of staying in the same right-of-way, and  
29 of using the operation, the maintenance, the communi-  
30 cations, and administrative organization that already



S.R. Blair  
Cross-Exam by Goldie

1 exists.

2 MR. GOLDIE: Q Well, just to  
3 sort of complete this, Mr. Blair, whatever you do, in  
4 order to accommodate the throughput shown on that  
5 table would have to be done in two years, wouldn't it?

6 A Well yes, that's what the  
7 table shows and I don't -- I'm not endorsing the figures  
8 You're asking me to say that the table says what it  
9 says, and of course, sure.

10 Q So that if you had to  
11 complete virtually a whole new system by looping, it  
12 would still have to be done within two years.

13 A Well yes, but I'm keeping  
14 the distinction between providing that capacity by  
15 looping and using what spare capacity already exists,  
16 and what other work force exists as distinct from  
17 building in an entirely separate new bypass line.



1 Q Can you tell me what  
2 spare capacity exists in the AGTL system as at the  
3 beginning of this year's construction season?  
4 That is to say on the main line we are concerned  
5 with.

6 A Oh, roughly, we haven't  
7 had a reason to have it calculated exactly -- I would  
8 say in the line from the northwestern corner of  
9 Alberta down to about Grand Prairie, about 250  
10 million cubic feet a day -- and downstream of  
11 that -- virtually none for the main lines going to  
12 eastern Canada. They are just about entirely used.  
13 There is some capacity as I recollect about maybe  
14 50 or 75 million cubic feet a day in the system  
15 feeding southwesterly to connect with the Alberta  
16 Natural Gas Company. I don't think that 50 or 75 is  
17 continuous through that whole system but it could  
18 be quickly provided by a small -- by removing one  
19 small bottle neck as I recollect, so the main  
20 capacity that is not being used at the moment is in  
21 northwestern Alberta and in about 250 million cubic  
22 feet a day.

23 Q Just for the record and  
24 to pick up the point that my friend made a few minutes  
25 ago, the reference that I was making yesterday to the  
26 filing section 11, pro forma financial statements,  
27 exhibit 146, uses annual volumes, specifically  
28 section 2, schedule 4: base case unescalated, line  
29 seven, total volume delivered, I'll think you'll  
30 find those annual volumes are consistent with the daily



1 deliveries shown on table one of the exhibit that  
2 I have placed in front of the witness.

3 A couple of other points before  
4 we are finished, Mr. Blair. Can you tell me what  
5 tonnage of 42"pipe is involved in the Foothills /  
6 AGTL (Canada) proposal -- and AGTL?

7 I am unable to pick it up  
8 from the various filings, I am sure it is there, but  
9 if you could tell me, would you please?

10 A No, I don't have  
11 that figure in my head.

12 Q All right -- I am  
13 sorry, were you going to add something?

14 A Well, I remember  
15 that it is about half the tonnage of pipe proposed  
16 for the Canadian portion of the Arctic Gas project,  
17 if that might give you a quick way of getting to  
18 it, but I just don't happen to remember how many  
19 hundreds of thousands of tons of pipe it is. I  
20 could guess, but I don't remember.

21 Q And the Canadian portion  
22 of the Arctic Gas project tonnage is what to your  
23 recollection?

24 A Well, I thought that  
25 would help you. I don't know that either. That's  
26 the only thing that I happen to have in my head  
27 at the moment, is about half of the tonnage -- it is a  
28 much smaller logistics problem and effort.

29 Q Well, if it is about  
30 onehalf of the tonnage, would it surprise you to know



1 that the filed anticipation of Canadian content is  
2 in excess for Canadian Arctic Gas, is in excess of  
3 50% of its tonnage?

4 A Well, it would astound me  
5 to hear that because I don't believe that is so.

6 Q Well, have you examined  
7 the filings of the Arctic Gas?

8 A A little, yes, but  
9 I don't believe that you can get that pipe in  
10 Canada.

11 THE COMMISSIONER: Do you  
12 say, Mr. Goldie, that your filings show that in  
13 excess of 50% of that pipe would be manufactured in  
14 Canada, is that the point?

15 MR. GOLDIE: Yes.

16 A Well, none of that  
17 pipe is manufactured in Canada at the present and  
18 whatever the filings show I don't believe that  
19 you'll get anything like half that pipe from  
20 Canadian sources.

21 Q Well, perhaps that  
22 will be left for another place to demonstrate?

23 A Well, you are raising  
24 it here, I am just answering.

25 Q Well, I am just exploring  
26 that your evidence in chief here which has been  
27 accepted and I wanted to know if you had before  
28 giving that evidence examined the filing and  
29 ascertained that in absolute tonnage the Arctic Gas  
30 proposal is to buy more pipe, more tonnage than the



1       tonnage than you anticipate purchasing. I just  
2       wanted to ascertain if you had learned that before  
3       you gave your evidence?

4                               A       Oh, yes, I think I  
5       looked into that pretty carefully and we have  
6       talked very carefully with the pipe suppliers  
7       in Canada and as I mentioned I think sort of  
8       elaborating in my direct evidence that we have been  
9       placing orders with them and discussing the specifica-  
10      tions and their ability to provide pipe and I don't  
11      believe that you will get anything like a half of  
12      your pipe from Canadian sources. I think that is  
13      wrong to say that,

14                              Q       And of course when you  
15      make that statement, you have in mind that a good  
16      part -- there is a substantial 42" tonnage in the  
17      Canadian Arctic Gas requirement?

18                              A       I wouldn't call it  
19      substantial. It's maybe significant. It is a  
20      pretty small fraction.  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30



S.R. Blair  
Cross-Exam by Goldie

1 The mainline is as filed as 48-inch all the way and  
2 the gathering lines are 48-inch, and they are only 42  
3 inches in Southern Alberta. I wouldn't call that  
4 substantial, it's a pretty small part of your project.

5 Q At page 30 of your --  
6 do you have your evidence in front of you?

7 A Yes.

8 Q Paragraph 2 you are  
9 referring there to the cost of delivery laterals and  
10 you indicate a capital cost of \$72 million, to put  
11 those laterals in place. Is that correct?

12 A Yes.

13 Q Later on you suggest --  
14 not later on, earlier, you suggest on page 30 that the  
15 annual cost of service for providing service through  
16 those laterals is in the order of 11 or \$12 million.

17 A That's not exactly what  
18 it says, but it's pretty close. What it says is that  
19 furnishing the gas to the communities at the same  
20 price -- the same transportation costs as it is furni-  
21 shed to Southern Canada, at least the southern bound-  
22 ary of the Northwest Territories, that that transaction  
23 will add 11 or \$12 million. The difference is that  
24 there is a small, you know, tariff applied to moving  
25 the gas to the communities too, and you have to add  
26 that on top of the 11 or 12 million, whatever it is.  
27 But it wouldn't make that much difference.

28 Q Well, the statement that  
29 is made, and I quote:

30 "It is estimated that 11 to \$12 million will



S.R. Blair  
Cross-Exam by Goldie

1 be added to the total annual cost of transporting  
2 gas to the Foothills system."

3 That is in addition to the cost of service.

4 A Yes.

5 Q Now, the fuel cost saving  
6 resulting from that is estimated at \$500 per household.

7 A Yes. Household in the  
8 Northwest Territories that is served by such gas.

9 Q Yes, of course, and the  
10 number of such households is?

11 A I don't remember.

12 Q Well --

13 A Many thousands, but I  
14 just don't happen to have the figure right with me.

15 Q I have a --

16 A It wouldn't be hard to  
17 derive, would it, if you take \$500 and -- no, you  
18 couldn't do that on the basis of the transportation  
19 costs, you'd have to relate it to the value of crude  
20 oil. The calculation is around but I just don't  
21 happen to have it up here.

22 Q Well, I'm talking about  
23 the number of households.

24 A Yes.

25 Q And I have a projection  
26 before me, and I think it's taken from a Canadian  
27 Arctic Gas exhibit that's been filed in these proceed-  
28 ings. At any rate I'll identify that for you in a  
29 moment, but it suggests that there will be about  
30 6,500 households in 1979. Would that be about right?



S.R. Blair  
Cross-Exam by Goldie

1 A I don't know. We have our  
2 own figures. John Burrell in our company has had  
3 charge of looking into this and he's made a careful  
4 study of the projections for gas consumption in the  
5 Northwest Territories, and he has had an independent  
6 consultant who has given us a calculation. All of this  
7 exists and it can easily be testified to, but I just  
8 don't happen to be equipped with it, sitting here at  
9 the moment.

10 Q Well, you have testified  
11 that the saving is \$500 per northern household.

12 A Yes, on the basis of  
13 that information as given to me by John Burrell of  
14 Foothills.

15 Q I'm suggesting to you  
16 that the number of households is about 6,500 or will  
17 be about 6,500.

18 A Well, you're saying  
19 that's Arctic Gas' estimate. I don't happen, as I  
20 say I just don't happen to have what ours is. It may  
21 be more or less.

22 Q Well, I have got no  
23 objection <sup>if</sup> Mr. Burrell goes up and tells you what his  
24 figure is, but --

25 MR. GIBBS: He will be on  
26 during the course of the Phase 1 evidence, if my  
27 friend wants to get those precise figures, if he is  
28 able to. Mr. Blair is put on, as he says, as an over-  
29 view and policy matter witness. My friend certainly  
30 will have the opportunity to get that detail from the



S.R.Blair  
Cross-Exam by Goldie

1 very may who prepared it.

2 THE COMMISSIONER: I take it  
3 that Mr. Goldie wants to elucidate some question of  
4 policy rather than simply quarrel about the number of  
5 households.

6 MR. GOLDIE: Absolutely. All  
7 I'm interested, whatever his figure is, that's what I  
8 want, because I have a question that relates to that,  
9 which is a policy question.

10 THE COMMISSIONER: Well --

11 MR. GIBBS: Mr. Burrell doesn't  
12 happen to be in the hearing room but we have sent for  
13 him.

14 MR. GOLDIE: The document  
15 that I am going to put in front of the witness is  
16 entitled:

17 "Impact of proposed Arctic Gas Pipeline and  
18 Energy Costs in Northern Communities,"  
19 and table 3-1 is,

20 "Projected areas for residential and commercial  
21 buildings in 1979, with communities, population,  
22 residential heating, number of homes, commercial  
23 heating,"

24 and I'm going to ask the witness if he would accept  
25 the proposition that the number of residential homes  
26 shown on that is about 6,500.

27 A Well, Mr. Burrell is  
28 apparently out doing some other work and in his  
29 absence I'll work from your figure. I don't know  
30 whether it's a good forecast or not.



S.R. Blair  
Cross-Exam by Goldie

1 Q I'll be surprised if there  
2 is any very substantial difference between the numbers.  
3 At any rate, if one accepts the fact that there is about  
4 6,500 households, then the annual cost of the savings  
5 is simply 500 times 6,500, or if my arithmetic is  
6 correct, about \$3,250,000.

7 A I agree with your  
8 arithmetic, yes.

9 Q Now, if the cost of  
10 providing that saving of \$3,250,000 is \$11,500,000  
11 annually, is that the most efficient way of providing  
12 that saving?

13 A Well, I don't know.  
14 I think that the principle here is that when you're  
15 taking something out of a supply region, it's a good  
16 policy to do something for the people who live there,  
17 and we have applied a rate-making proposition in this  
18 commitment that is consistent with the way that some  
19 other areas have been served in comparable circumstan-  
20 ces, both on the supply end and it's also consistent  
21 with the way that some areas in Southern Canada or  
22 you know, Central Canada, are served, and we think it  
23 makes good sense. The particular point of economic  
24 efficiency that you've raised is a factor, but there  
25 are quite a number of factors and we think it makes  
26 good sense, as a matter of public interest, to see  
27 that the people in the area get some gas. Now these  
28 calculations as to how much you save and what the total  
29 annual cost will be per household in total will all  
30 depend on what the future costs of fuels are -- of



S.R. Blair  
Cross-Exam by Goldie

1 other fuels as well as gas, and economists can compare  
2 their assessments. We think it's a good principle when  
3 we're taking something out of an area to do something  
4 for the people that are living locally, the people who  
5 have the country that your resource is in.

6 Q I'm afraid that hasn't  
7 answered my question, Mr. Blair. My question was not  
8 whether it was a good business to do something for the  
9 people in the area in which the resources were removed.  
10 My question was, is it the most efficient way to  
11 provide a saving in fuel cost of \$3,250,000 to spend  
12 \$11,500,000 annually?

13 A Well, I don't know, but  
14 we're trying to do something and whether or not what  
15 we have tried is the most efficient, I don't know.

16 THE COMMISSIONER: You're  
17 suggesting that it may be cheaper, Mr. Goldie, to  
18 ship fuel oil from Edmonton subsidized by the Pipeline  
19 Service Company, you're not suggesting that be done, but  
20 if we were to compare it you say it might well turn  
21 out to be cheaper?

22 MR. GOLDIE: I'm really not  
23 suggesting anything at this point, Mr. Commissioner.  
24 I simply wanted to ascertain whether the witness had  
25 made such an analyses; if that had been done, then  
26 certain other questions might have flowed from it.

27 That concludes my examination  
28 on that point.

29 A Mr. Commissioner, we have  
30 thought of this and there are points to be considered.



S.R. Blair  
Cross-Exam by Goldie

1 I mean you could argue it's unefficient to deliver a  
2 letter to a rural resident on a 5¢ postage stamp, too,  
3 and economically it's a very inefficient thing to  
4 do, but that's the way the country is run and we  
5 think that's the way it ought to work in the Northwest  
6 Territories in gas distribution too.

MR. GOLDIE:

7 With great respect, that  
8 wasn't the point. I was simply wishing to elicit  
9 whether an analyses had been made of the kind that I  
10 was asking for. Now, we're not arguing about  
11 anything, we're not arguing at all, in fact. The  
12 reference, just so it is complete on the record, that  
13 I made was -- I may have given it, table 3.1 at page  
14 17 of the exhibit,

15 "Impact of proposed Arctic Gas Pipelines,"  
16 and that sets out the residential and commercial build-  
17 ings anticipated in 1979. Thank you, Mr. Commissioner.  
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1 MR. GIBBS: MR. Commissioner,  
2 before anyone else begins there is still outstanding  
3 a point from Mr. Goldie's examination of yesterday.  
4 On page 28 of his prepared evidence at the end of  
5 the first paragraph, Mr. Blair had used the expression,  
6 "All that would do is soak up available  
7 Canadian savings and management talents to support  
8 a foreign conceived and led undertaking." Mr. Goldie  
9 and I, you recall, entered into an argument then  
10 about whether Mr. Blair could or could not answer  
11 the question. YOU asked Mr. Blair to define his  
12 phraseology and he did. The understanding that you  
13 meant, he should define what he meant by foreign  
14 conceived and led, but he still hasn't answered  
15 the question of what he meant by the total expression  
16 and my friend had said that he would come back to it.  
17 I am sure that he thought it had been taken care of  
18 in that exchange, but the witness doesn't so understand  
19 and would like to answer what he meant by the use of  
20 the expression.

21 And I bring it in now because  
22 my friend may want to follow it up with further  
23 questioning.

24 MR. GOLDIE: Well, isn't  
25 that a matter for re-examination?

26 MR. GIBBS: All right, sir,  
27 I am prepared to do it that way, but I thought it  
28 my lead to further questions by Mr. Goldie.

29 MR. GOLDIE: Well, it may  
30 well, but I don't --



1 THE COMMISSIONER: Well,  
2 we've got a number of other counsel who want to  
3 question Mr. Blair. I'd be inclined to think that  
4 Mr. Blair, if you wish, you want to elucidate this  
5 matter now and if Mr. Goldie then wants to ask  
6 further questions he may and other counsel  
7 will then be in a position to cross-examine knowing  
8 what it was you wanted to add to what you said  
9 yesterday, so we will proceed in the way that  
10 Mr. Gibbs has suggested.

11 MR. GOLDIE: Well, I wonder  
12 if before we do I could find the place in the  
13 transcript where this matter was left open because I  
14 don't have quite the same recollection that the  
15 witness was invited to come back and expand on  
16 his evidence.

17 MR. GIBBS: Well, Mr.  
18 Commissioner, I am not making a point of it. I  
19 can lead it in re-direct. I just thought it would help.

20 THE COMMISSIONER: I remember  
21 it well, and I remember Mr. Blair answering this  
22 matter and if he wants to add anything to what he  
23 said then, I am inclined to welcome it, but at any  
24 rate.

25 MR. GOLDIE: Well, I am in  
26 your hands, Mr. Commissioner, of course.

27 THE COMMISSIONER: Well, let's  
28 find the place where this happened if we can.

29 MR. GIBBS: Starting at  
30 page 7998, sir.



S.R. Blair  
Cross-Exam by Goldie

1 MR. GOLDIE: His answer  
2 concludes at the bottom of page 7999 where he says  
3 "That's what I meant by those words."

4 THE COMMISSIONER: Yes.

5 MR. GOLDIE: In  
6 the preceding pages I indicated that I wished to  
7 continue my examination and I said that I would allow  
8 him to come back and then at the top of the page,  
9 7999, line 12, you, Mr. Commissioner, said that  
10 you thought it would be fair now to do it rather than  
11 later.

12 MR. GIBBS: But using the  
13 words would he define the terms, which is what  
14 Mr. Blair thought he was doing.

15 MR. GOLDIE: Well, he did  
16 so in the answer in lines 20 to 29.

17 THE COMMISSIONER: So now  
18 that we have discovered where we were yesterday  
19 afternoon, Mr. Gibbs, what is the stage that we have  
20 reached now, what is it that you wish to give Mr.  
21 Blair an opportunity to do?

22 MR. GIBBS: Well, Mr. Blair,  
23 took your words and your question or direction, would  
24 he define the terms to mean would he define the  
25 words "foreign conceived and led" and not to mean  
26 would he explain what he meant by the entire phrase  
27 in his evidence. He thought he was going to get an  
28 opportunity at some later date to make that explanation.  
29 I suggest that he make it now in case it leads to  
30 further questions from Mr. Goldie, or if my friend



S.R. Blair  
Cross-Exam by Goldie

1 objects I am content to leave it to re-direct.

2 THE COMMISSIONER: Well, I  
3 think that we should do it now. We may have gotten  
4 into bad habits since you left us many months ago,  
5 Mr. Goldie, but go ahead, Mr. Blair.

6 A Well, the basis of  
7 my statement that we felt that the Arctic Gas pro-  
8 posal and still feel that the Arctic Gas proposal is  
9 foreign led and controlled is that it wasn't a  
10 matter of debating the structure of voting authority  
11 and who had vetoes because when you are one of  
12 27 or 28 companies it is pretty hard, with very  
13 diverse interest, it is hard to get agreement and  
14 the use of vetoes is -- it is not taken up often for  
15 that reason, just to try to find something in common  
16 with the other people and because everybody has a right  
17 of veto and it is not a matter of counting how many  
18 of the full time management are Canadian citizens.  
19 It really goes to the heart of the project proposal  
20 and one's judgment as to its motives and influence,  
21 and I know it is a matter of judgment, none of us can  
22 say that we are right or wrong in any absolute way,  
23 but the basis of our statement is this, that we  
24 feel that the Arctic Gas project is foreign led and  
25 controlled because of its emphasis on the claimed  
26 virtue of piggybacking, as it is called of getting  
27 the Canadian gas to Canadian markets by the  
28 great good fortune of being allowed to move the  
29 Alaskan gas across Canada, by the emphasis that has  
30 existed and still exists in its design on export of



1 Canadian gas into the United States. I am told  
2 that my 6.9 billion cubic feet a year -- billion  
3 cubic feet a day figure is the basis for rate  
4 making of the rate calculations of the gas going into  
5 the states. The one I gave yesterday, if anything,  
6 is low and we felt that the -- when we really got  
7 down to the influence and control of the project that  
8 it was still far too much a project under the  
9 influence of American oil companies and to a degree  
10 their Canadian subsidiaries and the American gas  
11 distribution companies in getting gas to the American  
12 markets, and in particular of the combination of the  
13 Humble Oil Company and American Natural Gas Company.

14 MR. GOLDIE: MR. Commissioner  
15 this is just a speech that is a complete repetition  
16 of what is in his evidence in chief. There isn't  
17 one thing that he's said so far that he hasn't said  
18 already in his evidence in chief on what I spent  
19 a good part of yesterday cross-examining. It is  
20 just exactly a repetition of what he said.

21 THE COMMISSIONER: I am inclined  
22 to agree. Well, does that pretty well sum it up,  
23 Mr. Blair?

24 A If you like, sir,  
25 yes.



S.R. Blair  
Cross-Exam by Templeton

1 to come back to this particular answer Mr. Blair has  
2 just given and cross-examine on it further later  
3 on I will certainly allow you to.

4 Well, that brings us to  
5 MR. Anthony.

6 MR. ANTHONY: I believe  
7 Mr. Templeton would like to go first.

8 THE COMMISSIONER: Well,  
9 Mr. Templeton.

10 CROSS-EXAMINATION BY MR. TEMPLETON:

11 Q Mr. Blair, the  
12 Environment Protection Board is interested only in  
13 what you propose to do<sup>and</sup> how the operation will be  
14 controlled by the pipeline company and the government  
15 in the recommendation to the Minister of the  
16 terms and conditions that would accompany a permit  
17 to build the pipeline which is really the job  
18 of this Commission.

19 My questions all lead to  
20 these terms and conditions, there is nothing  
21 else that I am interested in.

22 I think in discussing those,  
23 however, it should be one of the terms and conditions,  
24 if you like, should also include the ultimate recommen-  
25 dation that if the terms and conditions and the en-  
26 forcement mechanisms are not to what in our opinion  
27 is adequate, or that they are not adequate to protect  
28 the environment, that we reserve the option to  
29 recommend that a permit should be refused, so that  
30 I don't really accept the principle that the terms



S.R. Blair  
Cross-Exam by Templeton

1 and conditions -- that a pipeline is inevitable.  
2 So I would like to address the same questions to you  
3 that we addressed in our report on the CAGPL  
4 application and ask you whether you have completed  
5 your application sufficiently so that we can now  
6 form an opinion on the following questions. If  
7 you do not feel that you are sufficiently along in  
8 your studies to make an impact assessment, could  
9 you tell us what is being done and when do you  
10 expect to complete your impact assessment.

11 Now, I recognize that you  
12 have a submission in part V of your report and I  
13 am just getting around to, is this complete, because  
14 you also refer to other studies and other work that  
15 is going on and I am not clear as to just what  
16 stage you are in, so perhaps we could consider the  
17 points that we discussed in the CAGPL application and  
18 in general, have the Foothills plans demonstrated  
19 that it can protect the environment?  
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S.R. Blair  
Cross-Exam by Templeton

1 A We believe that we can  
2 protect the environment.

3 Q Well, apart from your  
4 belief , though, have your plans demonstrated this,  
5 where you are to date?

6 A I don't know. We've  
7 examined the environmental considerations. We've  
8 done quite a bit of work in the field. We are continuing  
9 as you bring out, to work for purposes of clarification  
10 of the conclusions that we have come to initially, and  
11 as an applicant we believe that proper work has been  
12 done to advance the application. But whether it is  
13 yet a final demonstration of the ability to protect  
14 the environment, I'm not certain. I'm not certain  
15 that it's up to us to offer an opinion on that, in  
16 any case. I suppose that's a matter for objective and  
17 completely independent appraisal.

18 Q Well, do you have an  
19 idea as to the time when we can say, "All right, we've  
20 gone far enough, we can demonstrate that we can pro-  
21 tect the environment"?

22 A I hope I'm getting  
23 right to your point in answering this way. Of course  
24 we do build pipelines as a continuous and regular  
25 part of our business routines, and we consider in  
26 advance what the environmental consequences will be,  
27 and we proceed when we're satisfied with those, as  
28 well as other factors. I feel as a matter of judgment  
29 overall that taking into account the period of time  
30 that this Inquiry will require, and that the National



S.R. Blair  
Cross-Exam by Templeton

1 Energy Board will require for its proceedings, and that  
2 the Government of Canada, as I expect, they will want  
3 some additional time to consider approval, I feel  
4 confident that by the time such events have occurred  
5 that we will have sufficiently verified our initial  
6 conclusions about environmental protection to be ready  
7 to proceed. I'm not trying to evade your -- do you  
8 want me to <sup>put</sup> months on these and say which months of  
9 which year I think these things will occur, because  
10 I'm pleased to do it? I'm not quite certain if you  
11 want a schedule or a general answer.

12 Q Well, I think the  
13 Commissioner is going to be faced with a go, no-go  
14 recommendation when he writes his recommendations to  
15 the Minister, regardless of the National Energy Board,  
16 and I think the various participants are going to  
17 want to make a recommendation to him, and since the  
18 time to make these takes a fair length of time, it  
19 evolves that you need to have some kind of a cut-off  
20 time of saying, "Well, we have gone far enough and we  
21 have now spelled out the terms and conditions suffi-  
22 ciently so that everybody can make his judgment."

23 A Well, I think that we  
24 have demonstrated that we understand -- I think we  
25 have at least demonstrated this, that we understand  
26 enough about how to be attentive to the protection of  
27 the environment to responsibly be able to say that  
28 we can proceed with the construction of a pipeline  
29 project, and that -- I think that is demonstrated by  
30 the work that's already been put in, but I don't mean



S.R. Blair  
Cross-Exam by Templeton

1 the work that's already been put in, you know, is  
2 absolutely conclusive on all of the route and the  
3 details of location and of construction timing. I  
4 think that we will well use the time that is available  
5 to complete our examination of the particular disciplines  
6 that ought to be placed on construction, but I do think  
7 we have already demonstrated that with the work that's  
8 in, that a pipeline can be built without -- a natural  
9 gas chilled pipeline can be built through this route  
10 without serious violation of the -- without significant  
11 violation of the physical environment.

12 Q Yes, of course some  
13 of us tend to be somewhat cynical, and we also might  
14 even look at the Alyeska Pipeline.

15 A Well, I recognize it's  
16 a matter of opinion. I was giving you mine. I was  
17 emphasizing a chilled natural gas pipeline as compared  
18 to the Alyeska Pipeline.

19 Q Well, I don't think the  
20 chilling of a gas pipeline would have much to do with  
21 the restriction of firearms or alcohol. There were  
22 many stipulations in the Department of Interior's  
23 regulations which I understand are not being maintained,  
24 and it has nothing to do perhaps with the efficiency  
25 of the pipeline, but it certainly has to do with the  
26 environment and for example, if we found that guns  
27 were going to be permitted, as I think Magistrate  
28 Sprecker mentioned in -- you remember that Alyeska  
29 said that they would not permit guns, they would not  
30 permit alcohol. Now when Magistrate Sprecker was



S.R. Blair  
Cross-Exam by Templeton

1 speaking in the Whitehorse hearing, he said it was  
2 pretty obvious that they were permitted, and that  
3 there were very serious consequences. Now, if guns  
4 are going to be permitted through one means or another,  
5 and I'm not saying the fault might necessarily be the  
6 pipeline company, but regardless of any cause, if  
7 guns are going to be permitted you can expect a very  
8 major deterioration in the wildlife of the Northwest  
9 Territories, an unnecessary deterioration, and many  
10 people in Canada would say, "No pipeline." If that's  
11 the cost, and it's an unnecessary cost, no pipeline,  
12 and I think I'm one of them.

13 A Well, I think I'm one  
14 of them, too. I know I am. I think perhaps my  
15 answer was a little, you know, too narrow, because  
16 when we were talking of protection of the environment  
17 I was thinking of the physical effects of building a  
18 pipeline. When you consider the -- I would think  
19 guns and alcohol, you know, I agree the guns will  
20 work on the -- will work against the wildlife, and  
21 logically one could think I might have thought of  
22 them when answering your question, on the environment.  
23 I was thinking more of the social impact aspect of  
24 this. I don't think there should be any guns in the  
25 construction camps, and as a company we would enforce  
26 a prohibition against employees using guns. The  
27 alcohol one is a little tougher. I'm really respect-  
28 ful of the point of some of the communities that they  
29 don't want a construction camp to be located within  
30 access of their community, and then furnished with a



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Cross-Exam by Templeton

1 lot of alcohol, either have the alcohol come in, or  
2 have the people who are using alcohol come into their  
3 community. I think that the point there, though, is  
4 one more of social impact generally. I think alcohol  
5 is just part of the situation, and the important thing  
6 is to keep the construction people out of some communi-  
7 ties that don't want them near.

8 I think if you do that that  
9 some use of alcohol -- well, use of alcohol in the  
10 construction camp can be all right. I don't think that  
11 it has anything specially to do with protecting the  
12 environment. I know, I mean I say what I think about  
13 these things because really at this stage, Foothills  
14 is an applicant, it has a small organization, it hasn't  
15 had the occasion to refine all of its future operating  
16 disciplines and policies. Where we haven't defined  
17 them or refined them all, then I think the thing to  
18 do is to look behind Foothills to the operating  
19 companies that do exist, Alberta Gas Trunk Line  
20 Company and Westcoast and see how they perform, and  
21 I can responsibly as an officer of one of them tell you  
22 what my own positions would be on defining policy, and  
23 I expect they would be implemented through Foothills  
24 in due course.



S.R. Blair  
Cross-Exam by Templeton

1 Q Well, perhaps we  
2 could go on to the next question that we asked CAGSL.  
3 Has Foothills -- a similar question -- has Foothills  
4 demonstrated that it will train all of its project  
5 personnel in environment protection measures?

6 And I am not asking for  
7 the details, I am really asking for the policies,  
8 because you are going to set the policies and I  
9 don't want all the details, but if you feel you have,  
10 that we can now make our analysis as to whether  
11 we think you have, I'd like to hear it.

12 A Well, I don't presume to  
13 say that we have demonstrated that we will achieve  
14 that objective, but I am pleased, you know, testify  
15 as to what we will propose to do and then hope that  
16 others consider that we have demonstrated our  
17 organization for that purpose. We rely and again  
18 I look behind Foothills to the existing companies and  
19 to the fact of their operation more than to promises  
20 of what will -- what we would do if we got the  
21 certificate -- I think that is the better thing to  
22 do.

23 We rely very much on the  
24 discipline of an inspection team over construction  
25 who are members of the owning company and with the  
26 various inspectors in each spread, a clearing and  
27 grading operation inspector, a ditch inspector,  
28 welding inspector, coating inspector and tie-in  
29 inspector, lower and tie-inspector and a cleaner-  
30 up inspector of which probably the two most important



1 people would be the front end inspector, the man  
2 inspecting the clearing and grading and the  
3 clean up inspector, and these people -- I mean those  
4 are the two more important from the point of view  
5 of environmental protection. These people are  
6 employees of the owning company, they have no --  
7 they are no way under the influence of a contractor.  
8 Each inspector has the authority to shut down the  
9 operation that he is inspecting and the chief in-  
10 spector has the authority to shut down the whole  
11 spread and they do shut them down either the  
12 operation or the spread if they believe that the  
13 work is not being done in accordance with the  
14 standards that we impose as the owner and each of  
15 these people is trained in and experienced in the  
16 techniques and the specifications of the operation  
17 that he is inspecting and so I believe that by  
18 describing that organization that our answer is  
19 affirmative, that yes, we do demonstrate a commitment  
20 to train the people that will discipline the protection  
21 of the environment.

22 Q Do you consider that  
23 Foothills has presented its contingency plans for  
24 meeting emergencies that could affect the environment,  
25 such things as summer repairs to line breaks in  
26 permafrost areas, forest fire contingency plans and  
27 others?

28 A Yes, I think so, through  
29 the material that we have filed and the performance  
30 of the sponsor companies I think that we do



S.R. Blair  
Cross-exam by Templeton

1 demonstrate -- I hope we thought of everything --  
2 we do demonstrate our readiness and the nature of our  
3 plans for meeting such emergencies. We experience  
4 occasionally emergencies of that sort in northern  
5 ALberta, northern British Columbia and I think that  
6 the performance of our company demonstrates  
7 the existence of our plans to meet such emergencies.

8 Q Well, I gather that  
9 you consider that the plans that you have presented,  
10 regarding, say the repair of summer line breaks,  
11 repair of line breaks that are repaired in the summer-  
12 time, is in general adequate?

13 A Well, I hope so, and  
14 if it is not I hope that the continuous performance  
15 of the sponsor companies will substitute as evidence  
16 of the responsibility of the people who would  
17 operate this pipeline, because they are the  
18 same people basically, we will draw on the two  
19 operating companies for the management of the project  
20 combined with the northern residents that we have  
21 had with us now for a number of years and the  
22 additional ones we'd get, and perhaps I'll use  
23 this question as an opportunity to go back and  
24 say that we plan and would commit that those  
25 front end inspectors and clean up inspectors  
26 be people who -- and I choose those two occupations  
27 because they are particularly concerned with the  
28 matters of environmental protection, would be  
29 people both who have pipeline operation experience  
30 and are themselves northerners, and as close as



S.R. Blair  
Cross-Exam by Templeton

1 we can and I think we can considerably from the  
2 roster of people available now, appoint people  
3 who are not only northerners, but residents and part  
4 of the community, that the spread is working  
5 through. We thought that that would make particular  
6 sense and that's where we intend to assign a number  
7 of the people who have been working with us now  
8 for five years or less.

9 Q Well, I think perhaps  
10 the -- I think you are explaining very well your  
11 usual operation of how you go at it. This particular  
12 one is somewhat different by virtue of the  
13 requirements of this Commission, and that there  
14 must be, I suppose it comes to the next question,  
15 is, has Foothills demonstrated that although  
16 the technology may be available and the will  
17 available to protect the environment, that it actually  
18 will do so, and I think this must be addressed by  
19 spelling out in the terms and conditions exactly  
20 what is the Applicant going to do and what chances  
21 of success is he going to have.

22 A Well, we have done our  
23 best to submit information on what we would do and  
24 as a matter of policy we firmly state our intentions  
25 to see that the regulations that we would impose  
26 or that others would impose are followed. I  
27 think that it is quite important to look at  
28 what we do, we really do do currently, because I  
29 think in a way it's as significant as the promises  
30 made in testimony and while I agree that there are



S.R. Hair  
Cross-Exam by Templeton

1 some different circumstances in the Northwest  
2 Territories, they are not all different and a lot  
3 of the conditions that we encounter in the northern  
4 half of Alberta and the northern half of British  
5 Columbia are similar to those in much of the North-  
6 west Territories and I think -- I do think that there  
7 is a real point to be made that one of the really  
8 responsible ways of answering on our performance  
9 is to see what is happening there, but I acknowledge  
10 that there are differences and I hope that we have  
11 anticipated the differences.

12 Q I really intended, if I  
13 live so long, to perhaps read some commitments back  
14 to both applicants, or whoever gets this thing,  
15 at a later date --

16 THE COMMISSIONER: At  
17 the next Inquiry --

18 MR. TEMPLETON: Pardon me?

19 THE COMMISSIONER: At  
20 the next Inquiry? Carry on -- let's not even think  
21 about such things.

22 MR. TEMPLETON:

23 Q I am having a little  
24 difficulty -- I believe I hadn't seen the Minister's  
25 letter as yet, but it said something to the effect  
26 that your application was to consider the  
27 difference between the CAGSL application and  
28 your application. Now, I am probably not expressing  
29 that correctly, and it's all -- but the difficulty  
30 that I am having is how much of the CAGSL application



1 are you relying on in environmental matters and  
2 how much are you relying on your own? You see,  
3 if Mr. Horte makes a commitment I can understand  
4 that, but I don't think that applies to you and  
5 so in all of this are we to rely only on the  
6 material that you supply or are you assuming that  
7 some of the CAGSL work that you participated in  
8 is going to be used as well?



S.R. Blair  
Cross-Exam by Templeton

1 MR. GIBBS: I think, Mr. Commis-  
2 sioner, this will become more evident, in the environ-  
3 mental phase . It's pretty difficult at this stage  
4 to catalogue everything we rely upon and that which  
5 we differ, when we're in Phase 1.

6 THE COMMISSIONER: Well, wasn't  
7 there -- isn't there -- what is the material that has  
8 so far been received by the Inquiry from the Minister,  
9 Mr. Scott? We've received his letter. Have we received  
10 anything else elucidating the differences?

11 MR. SCOTT: We received, Mr.  
12 Commissioner, his letter , as noted. We have received  
13 a document entitled:

14 "Comparison of the Foothills and Arctic Gas  
15 applications for a permit to construct the  
16 Mackenzie Valley Gas Pipeline,"  
17 dated July 7, 1975, which I understand to be a comparison  
18 prepared by Foothills in response to a request from the  
19 Department to produce a comparison. I don't think that  
20 has been made an exhibit as yet, though it is a docu-  
21 ment that is available, and in due course will be made  
22 an exhibit.

23 In addition, we have  
24 received from the Department a document also prepared  
25 by Foothills Pipe Lines Ltd., dated July 7, 1975,  
26 which is entitled:

27 "Comments of Foothills Pipe Lines Ltd. on  
28 the Pipeline Application Assessment Group's  
29 56 questions and Canadian Arctic Gas Pipeline  
30 Limited's responses."



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1 which I understand was prepared in response to a request  
2 from the Department that Foothills should respond to  
3 the list of enquiries that the Government Assessment  
4 Group put to Canadian Arctic Gas in the course of  
5 preparing the Assessment Group Report, and that they  
6 should also respond to Arctic Gas' responses, or should  
7 also comment on Arctic Gas' responses. That is at hand.  
8 It has not yet been made an exhibit either.

9 THE COMMISSIONER: You haven't  
10 see either of those, I suppose?

11 MR. TEMPLETON: No. Perhaps I  
12 should leave this subject. I did want to introduce it  
13 because I wanted to sort of put Mr. Blair on notice  
14 that we would be asking those -- or addressing ourselves  
15 to those questions when we make a recommendation to you.

16 THE COMMISSIONER: Maybe, Mr.  
17 Scott, those copies of those could be provided to all  
18 the participants over the lunch hour. That might be  
19 arranged.

20 MR. SCOTT: I'll have to see,  
21 Mr. Commissioner, if copies can be prepared by the  
22 lunch hour to do that. They will be circulated as  
23 quickly as possible.

24 A Mr. Templeton, I'd like  
25 though to give you just a very brief answer now, that  
26 we rely on our own work and our own evidence and our  
27 own commitments. We don't claim to come under any  
28 commitments made by Arctic Gas, but make our own  
29 separately and directly for and to the account of  
30 Foothills Pipelines.



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1 THE COMMISSIONER: I don't think  
2 that they feel bound by the commitments that you have  
3 been prepared to make either, so --

4 MR. TEMPLETON: Q Well, along  
5 that subject then, I think the Board in its -- when it  
6 presented its evidence early in June made a fairly  
7 strong description of the problems of trying to make  
8 an impact assessment without a detailed subject descrip-  
9 tion, and I am having some difficulties knowing pre-  
10 cisely the project description. I realize part of it's  
11 in the atlas, but there is a great deal that isn't  
12 in the atlas or in the written material that can  
13 materially affect the environment, and I was wondering  
14 if you had an idea when this material could be address-  
15 ed?

16 A Well, as soon as we would  
17 know what additional information was required. We  
18 filed what we thought was relevant, and we have some  
19 work going on which we regard as verification work,  
20 and we have in our heads the -- our knowledge of how  
21 we operate and how we would propose to operate here.  
22 But I think we're ready to give the answers instantly  
23 as soon as we would receive the questions.

24 Q All right, on another  
25 subject then, we've discussed a number of times looping,  
26 and I am not clear. Is the principle established in  
27 your mind that if looping is required that an environ-  
28 mental impact assessment would be prepared before each  
29 new loop is contemplated?

30 A No. That principle is



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1 not established in my mind but only really because we  
2 haven't -- at least I haven't considered it. I would  
3 think it would -- at least what we would offer on it  
4 was that it would depend on the circumstances. Looping  
5 can be so routine even sometimes within a cleared right-  
6 of-way, within an occupied right-of-way that it might  
7 seem elaborate to produce an environmental impact  
8 assessment with each application. But if it were  
9 established that there was a real consequence of  
10 environmental impact from a proposed looping, I suppose  
11 the procedures would be similar to those of an original  
12 construction. We would have to go before the National  
13 Energy Board for a certificate and for each looping,  
14 and if we required any right-of-way additional to that  
15 furnished under the original easement we'd have to  
16 go for land use permission before the Federal  
17 Department, and there's no particular reason why those  
18 procedures should not include the preparation of  
19 environmental impact assessment if it were relevant and  
20 would produce some significant result.

21 Q Is looping inevitable?  
22 What I'm trying to get at, does this project that  
23 we're talking about now contain inevitably looping?

24 A No. The Foothills  
25 project does not, but I don't mean to be convenient.  
26 I'm being, you know, literal in the answer, but I  
27 should say that there is some real prospect of looping.  
28 The Foothills project as presently advanced would be  
29 of sufficient size to give a permanent transmission  
30 service for gas reserves of up to perhaps 25 or 30



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1 trillion cubic feet in total, and we think that the  
2 potential of -- our consultants tell us that the  
3 potential of the Mackenzie Delta is something like  
4 39 trillion cubic feet, and others have estimated as  
5 high as 70 or 80. So there is a potential of expansion  
6 of the system, depending on the growth of markets in  
7 Canada and on whatever happens with the development  
8 of other gas supply in Canada, and the possibility also,  
9 I think a rather less probable one, that the Government  
10 of Canada might decide as a matter of overall trade  
11 and external affairs negotiation to require the Canadian  
12 utility to offer a supplementary service to move  
13 some Alaskan gas across Canada. So either of those situations  
14 could provide a need for looping, but neither are  
15 or should be regarded as at all inevitable. I think  
there also is a distinct possibility that the original  
Foothills line would be sufficient permanently.

18 Q So the project description  
19 for this hearing is a single line, and if looping is  
20 required, it will come before other regulatory or  
21 regulatory bodies, not necessarily other, but  
22 regulatory bodies at another time.

23 A Yes, definitely so.

24 Q Do you have any -- you  
25 you know the looping does have effects particularly on  
26 birds and mammals, and some degree on fish, but -- and  
27 if the looping comes so quickly that they don't have  
28 a chance to recover, permanent damage to their species  
29 can occur, so that dates are fairly important, and I  
30 notice in your answer to question No. 3 you say --



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1 and I'm not sure just whether you mention the years  
2 1984 or 1985. I was wondering what the chances of  
3 -- if you were an environmentalist you might say "risk",  
4 but what are the chances of it happening at that time?  
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1 A Well, I don't know.

2 Right at the moment these things appear to be  
3 sufficiently clear as to be properly assumed by  
4 a company in our situation. It does appear clear  
5 that additional gas supply in Canada will be required  
6 over and above that produced from the conventional  
7 supply areas as soon as a manageable project can  
8 be accomplished, and it does appear clear -- it  
9 appears sure that the one frontier area in Canada  
10 which has gas in supplies sufficient for a  
11 commercially feasible connection, is the Mackenzie  
12 Delta/Beaufort Basin, that is the only one that  
13 is in that state; and -- but it also appears clear  
14 that the probable estimates of additional supply  
15 from the Mackenzie Delta, Beaufort Basin area would  
16 only be sufficient to fill about the size of  
17 project that we are proposing and that such a  
18 project could satisfy the continuing growth of  
19 demands for Canadian markets and maintain the  
20 existing levels of deliveries of gas into the United  
21 States, at least within the existing permits until  
22 about the middle of the 1980's.

23 After -- Now, that is  
24 about all that I know surely enough, you know,  
25 to speak firmly about. It may be that in the middle  
26 1980's very large additional quantities of gas  
27 will be available from the Arctic Islands through  
28 one route or another and I hope that is so. I  
29 think there'd be tremendous advantages to Canada  
30 and Canadian companies if that occurs and it may



1 be that sufficient gas is discovered on the Labrador/  
2 Newfoundland Trench to contribute substantially to  
3 supply and my own guess at the moment is that it  
4 is more likely that there will be gas from those  
5 other sources, the Arctic Islands and offshore on  
6 the east coast and that there will be large  
7 expansions from the Delta, but it is only a  
8 guess and the result will depend of course on  
9 factors beyond the control of any of us, on exploration  
10 results in the future.

11 Q In the hearings at  
12 Whitehorse the alternate routes were being discussed  
13 and it seemed evident to me that the location of  
14 the future gas reserves was a very important  
15 feature in locating a pipeline west of the Mackenzie  
16 Delta. In other words, if future reserves were  
17 west of the Delta in the Beaufort Sea, then this  
18 event would favour the coastal route.

19 Now, I realize that you  
20 are not applying for a route west of the Delta,  
21 but since additional reserves are anticipated  
22 it seems reasonable that if they are discovered that  
23 future lines would be built to them and it  
24 doesn't bother me very much whether it is called a  
25 gathering line or a transmission line, the effect  
26 on the environment is the same and I wonder if  
27 you can speculate and I realize that that is all  
28 it is, where these would be because I think it  
29 makes quite a difference in the ultimate analysis.

30 A No, I can't really



1 help because I have no basis at the present on which  
4 to speculate where any additional gas would be  
3 discovered west of the delta. I have no advice or  
4 no information that indicates that there is any  
5 particular reason to expect such discoveries. What  
6 we expect is that the basic supply area has already  
7 been indicated. I mean that the existing gas wells  
8 indicate the original supply area and that the  
9 next extension of the supply area would be northward  
10 into the sea rather than eastward or westward on the  
11 land.

12 Q Well, since all deltas  
13 are places of great environmental importance and  
14 the Mackenzie Delta is of particular significance  
15 to the Arctic, the whole Arctic, would you agree  
16 that extreme care must be exercised in making  
17 alterations or causes of pollution to the Arctic or  
18 to the Delta ?

19 A Yes.

20 Q And that you would  
21 perhaps make contingency plans to make sure that  
22 -- I realize that you don't intend to do anything  
23 to the Delta, but we have seen in the past that best  
24 intentions sometimes aren't fulfilled.

25 A Yes, we would  
26 make contingency plans.

27 Q I'd like to go back to  
28 that Alyeska example because it is very disturbing  
29 to me. I think that I have seen a great many  
30 statements and I don't know whether they are in the



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1 evidence before this hearing, but it was the best  
2 engineered, most environmentally studied and best  
3 controlled pipeline in the history of pipelining, and  
4 I think that we have all heard that, I imagine you  
5 have, Mr. Blair.

6 A Well, yes, I have read the  
7 advertisements and I suppose I have seen the same  
8 written material that you have, more or less.

9 Q And yet when we  
10 heard Magistrate Sprecker say that guns were  
11 permitted on the job and bearing in mind the 40  
12 mile herd is right there and that the caribou that  
13 effect Canada, are not national animals, they  
14 are international and so are the birds and so are  
15 everything else, I am just having some real difficulties  
16 in knowing how you make undertakings here and I  
17 don't doubt for a minute that the people that proposed  
18 the Alyeska pipeline had every good intention and  
19 so had the Department of the Interior and so had  
20 the state, but it isn't happening and I hope that  
21 you can, in your submissions, do something to assure  
22 us that these things will not happen here and I  
23 certainly hope that the Government of Canada might  
24 even be listening, because they too have a responsi-  
25 bility.

26 A Well, I agree with all  
27 of your sentiments, and I hope that we can give  
28 sufficient assurances here and I know I am being  
29 repetitive, but I do think that it is pertinent  
30 to say that coming from operating companies that live



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1 with themselves and the governments and the public  
2 that we do live with that you count on a record of  
3 performance as part of the proof of the reality of  
4 your assurances and commitments.

5 Q One of the things that  
6 Magistrate Sprecker mentioned and I don't have  
7 a transcript and I am not even sure that I am  
8 quoting him correctly, because it was late at night  
9 and I was tired, but he said, I think he mentioned  
10 in somewhere when he was talking about guns,  
11 alcohol, social problems, that the unions had insisted  
12 that their employees have the same rights as the  
13 people of the State of Alaska and I don't know --  
14 I don't want to continue that to draw a conclusion  
15 because I may have misunderstood him incorrectly,  
16 but do you think that if you make an undertaking  
17 at the hearings that you will be able to sell this,  
18 if that is the right word, or control the union,  
19 or is there going to be another factor when we  
20 come to seeing it built that the union might say  
21 you can't restrict guns.

22 A I don't know. I'll  
23 make sure some other witness can give you a direct  
24 answer about guns because I just don't know -- about  
25 liquor I know that we do effectively in Alberta  
26 restrict operating personnel working on gas plant  
27 or compressor stations from having liquor on the  
28 job or being drunk on the job. I know that works  
29 so I am sure that that is so, and I am pretty sure  
30 it is true in construction. I think we can give  
31 evidence that we effectively eliminate that from construc-  
32 tion.



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1 I am just, you know, answering on the basis of  
2 experience, but we will make sure that the points that  
3 you raise now are anticipated and spoken to directly  
4 by Mr. Hushion, our executive vice-president, who heads  
5 our engineering and construction operations.

6 Q Well, those two --  
7 sorry.

8 A Or some other witness  
9 associated with him.

10 Q The two examples of guns  
11 and alcohol are only two of them. Skidoos, all  
12 terrain vehicles that can be used by personnel in the  
13 summertime, the harrassment of birds at the very crucial  
14 nesting period by aircraft, private or operating from  
15 your air strips, are other examples, so that it isn't  
16 -- there's quite a long host of things and I think  
17 the question is are you going to be able to control  
18 the workers, because we're in a period in society when  
19 most things seem to be permitted, and your inalienable  
20 right to be able to do anything you want. Perhaps  
21 that's an over-statement, but I'm wondering, are you  
22 going to be able to control the workers?

23 THE COMMISSIONER: I think  
24 we're all wondering that. The experience in Alaska  
25 is very instructive. They tried to keep the camps  
26 dry, and now they're having to consider allowing beer  
27 on weekends and hours off , it's not easy. You  
28 mentioned that you managed to keep your gas plants  
29 and compressor stations dry. The number of people  
30 working on those places is perhaps no more than half



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1 a dozen. The camps in Alaska have 1,000 men or more,  
2 and each of the camps Arctic Gas proposes will have  
3 800, the camps you propose will have 500, and when you  
4 get that many men, they're usually young men, together,  
5 even if you're paying them very high wages there's a  
6 tendency to insist upon what Mr. Templeton has described,  
7 as their inalienable right to do what they want to do.

8 Well, I think that we'll have  
9 a break for coffee and think about this.

10 (PROCEEDINGS ADJOURNED FOR 15 MINUTES)

11 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

12 MR. TEMPLETON: Q Mr. Blair,  
13 perhaps I was unfair in some of the things I said  
14 regarding liquor and guns. I think that Magistrate  
15 Sprecker was talking about a place where there was a  
16 road. His community was in a road, or there was a  
17 road there, and that one of the reasons perhaps was  
18 -- that they couldn't control it was that people could  
19 come in in automobiles; but of course we can't forget  
20 that the Dempster Highway is also there. It also  
21 goes through the caribou calving grounds, and that  
22 your employees might well take that -- not the calving  
23 grounds, sorry, it goes through the caribou grounds,  
24 and that your employees might well take that route to  
25 get to the area and also the Mackenzie Highway is  
26 progressing, perhaps not as quickly as the Prime  
27 Minister has promised, but it's still progressing, I  
28 think. Do you have -- I want to be fair about what  
29 Sprecker was saying, and I don't know whether that  
30 applies to the whole line, the Alyeska line or not,



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1 but it does apply to quite a large portion of it.

2 A Well, I've been thinking  
3 in the coffee break what I might -- anything that might  
4 be useful for me to say about guns and liquor, and I  
5 was thinking this, that maybe what I could contribute  
6 is a little history, because fate had me working as  
7 either a senior engineer or assistant superintendent or  
8 an inspector or a tractor driver or something on every main  
9 pipeline that's been built in Canada, and I think I've  
10 got a fairly good recollection of what really has  
11 occurred with both guns and liquor.

12 As to guns, we had some real  
13 bad instances back in the 1950's, some of the worst  
14 things of all happened. Some people, through ignorance,  
15 would bring a high-powered hunting rifle out on a  
16 construction job and then wander up on the hills on a  
17 Sunday night or something and, you know, the worst  
18 fears occurred. They'd maybe kill a moose and not  
19 even take the head off right, and leave the meat and  
20 that sort of thing. There were bad instances. I  
21 don't think there were too much -- it's not really been  
22 a prevailing problem on construction spreads in  
23 Canada because I think the nature of the work, the  
24 7-day week and the outdoor work kind of takes the  
25 steam out of the guy from wanting to go hunting too  
26 much. I think the instinct to get out and walk over  
27 the hills is pretty much used up on the job, and I  
28 mean that's sort of a general assessment, and I don't  
29 mean it's the absolute answer.

30 I think the answer has to be



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1 in the hunting regulations. I think if you -- I think  
2 if there is a closed season imposed locally, and it's  
3 big game hunting we're talking about, people aren't  
4 going after birds from construction jobs, hardly --

5 Q They may not be going for  
6 birds as such, but they could be doing the same as if  
7 they were by harassing them through aircraft or all-  
8 terrain vehicles or anything else.

9 A Well, yes. I'd like to  
10 get to vehicles maybe as a third category, but just  
11 speaking of guns, I think it's rifles you're talking  
12 about, not shotguns, and I think if you have a closure  
13 of big game hunting in the area then I think as a  
14 practical matter you can discipline the prohibition of  
15 use of rifles. I think that a contractor can make it  
16 work to say that, "One thing on this job is nobody  
17 hunts against the regulations." I think you have to  
18 start by closing the season.

19 Liquor, I don't think there's  
20 any way you can keep it off the job. Some people --  
21 some of us are used to as part of the diet having a  
22 --

23 Q I hope you weren't looking  
24 at me.

25 (LAUGHTER)

26 A I was making sure I  
27 wasn't being pious myself -- having a few drinks, and  
28 I don't think there's any particular reason to keep it  
29 off the job so long as you keep it away from the vehicles.  
30 I don't think there ever has been a job that has



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1 effectively kept liquor out of the construction camp,  
2 but you can keep it out of the mess house and -- but  
3 if somebody wants to have a bottle in his suitcase or  
4 under his bunk or something like that, I think that  
5 will always happen, and I think it's just phony to  
6 talk of it not occurring. But I think that the key  
7 thing there is vehicles, because I do think -- I  
8 was thinking about this rather carefully before I  
9 said anything about it -- but I think you can also  
10 effectively stop anyone from -- who has been drinking  
11 enough that it would matter from operating a vehicle,  
12 and I think so long as you do that probably it doesn't  
13 matter that much. I don't mean -- I'm not suggesting  
14 these are absolute, you know, conclusions, but just  
15 as a matter of opinion, someone living with this  
16 kind of situation.

17  
18 Then when you come to vehicles  
19 I think that we can operate on the basis that there  
20 are only company vehicles at the site. It will be  
21 tough if you get down near one of the larger communities  
22 but we don't get too close to too many of them, and  
23 one of the things we're looking at, after our hearing  
24 how they felt in Good Hope, is trying to keep those  
25 construction sites well back from the communities with  
26 the roads. I think so long as you've got company  
27 vehicles on the site you can -- I think it's entirely  
28 practical. I wouldn't have any problem in disciplining  
29 a crew of men or a spread of men that the company  
30 vehicles should not be used for some, you know, in  
some ways, including ways that would harrass the



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1 fauna. So I just thought I'd offer you that as --  
2 it may be more useful than, you know, saying what  
3 we're going to do. It's what we've seen happen in  
4 the past.

5 Q How about aircraft, do  
6 you think that you'll be able to control the use of  
7 aircraft as to elevation and harassment by just  
8 viewing or photography or whatever?

9 A Yes, absolutely. Air-  
10 craft, they are already really controlled, and for  
11 other reasons, and I'm sure it can be done, and I  
12 think maybe when I'm saying these things can be  
13 arranged, maybe that's under-stating them. A spread  
14 superintendent or a chief inspector and, you know, a  
15 chief inspector will be working for us and the  
16 spread superintendent will be susceptible to hearing  
17 from the owner, and either of those people can dis-  
18 cipline, in the way that we've described.

19 Now, when we get into the  
20 business of sort of human rights of whether it's  
21 working on somebody's citizenship to tell him he can't  
22 do these things, well I don't -- it seems to me on the  
23 gun thing that isn't true. If you say there's no  
24 hunting, I think we can say, "O.K., then there's no  
25 shooting," and I believe you can even go beyond that  
26 and say, "There's no rifles in camp."

27 On the liquor one I don't  
28 think you should even try to prohibit, but the operat-  
29 ing of vehicles by anybody who has had enough to drink  
30 that it would make a difference, I think also you can



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1 absolutely prohibit that, and make it stick because  
2 we do, you know, on a construction spread people may  
3 have some drinks but nobody gets on a tractor or in  
4 a truck if the foreman or inspector has any impression  
5 at all that he has had enough to drink to matter.  
6 That does work.



1 Q Could we go to page  
2 17 of your prepared evidence which is the answer to  
3 question 16. Mr. Gibbs asked you the question  
4 -- he introduced it first and then he said, "With  
5 that as a basis, could I start this series of questions  
6 by asking for the traditional approach to pipeline  
7 sizing?" And you gave the answer and I assume that  
8 it is the traditional approach, but I notice that  
9 there is no mention of environment in the process  
10 and I merely wish to point out that perhaps the  
11 future traditional method might well include other  
12 things besides economics.

13 A Yes, it might possibly.  
14 It hasn't so far in the provinces because the  
15 environmental effects of looping have not ever  
16 been to my knowledge sufficiently serious to deserve  
17 putting in a bigger size initially.

18 We do that -- I suppose there  
19 is a similar result in some river crossings where  
20 you size a larger line or sometimes put in dual lines  
21 but that is more for security of operation than to  
22 avoid going back into a difficult construction job  
23 twice than it is really thinking of the environment,  
24 but I suppose that the same sort of consideration  
25 might be given for environmental reasons, but I  
26 think that -- I'd be surprised if there were very  
27 many places where it would deserve putting in a  
28 larger size initially to make sure you didn't loop.  
29 I think probably if you've got enough environmental  
30 protection to clear the 120 foot width of right-of-way



1 in the first instance and lay one line, that you  
2 have covered the situation sufficiently, perhaps with  
3 another application, as you brought out before, you  
4 would go in and loop rather than lay a bigger line  
5 initially.

6 Q But if you were going  
7 to cross the Delta with a gathering line or a  
8 pipeline, this might be one place?

9 A Well, it would be arro-  
10 gant, I think, to say that it wouldn't be a consideration  
11 and it would have to be considered, but I rather  
12 doubt, as I say, that you would very often conclude  
13 that that was sufficient reason to put in a larger  
14 line, because it is a tremendous amount of money  
15 that we are talking about in these sizes of line --  
16 the sizes of lines. It would be cheaper to take  
17 elaborate methods to protect the environment than  
18 to, normally than to put that much additional capital  
19 in in the first instance.

20 Q The economic cost is  
21 great and so is the environmental cost if it's not --  
22 of the Delta, I am speaking of.

23 A Oh, I am sure that is  
24 so, Yes.

25 Q Page 18, the answer to  
26 question 19, regarding looping again, I think you  
27 mentioned that you used the term "not in economic  
28 terms", and I assume that in future that environment  
29 and social would probably be included as well.

30 A Yes, they are all



1 included currently and I wasn't meaning to exclude  
2 them at all in that answer.

3 Q On page 20, question  
4 24, you mentioned your answer, "But that would not  
5 be sufficient to carry the Alaska gas as well  
6 as Canadian," and I recognize that this is not  
7 part of your application and if this additional  
8 route to carry Alaska gas is contemplated, that  
9 environmental and social problems would be  
10 studied and predictions reported, but I just wanted  
11 to clear up that; you don't consider that -- the  
12 extension west to pick up Alaska gas as part of your  
13 application and even though it may well be permitted  
14 under the '72 guidelines -- I worry about the  
15 wording of the guidelines and the contemplation of  
16 the first pipeline and then the second pipeline and  
17 then a road, and this is of great concern to us in  
18 either route west of the Mackenzie River.

19 A Sir, you are correct  
20 in saying that our application does not include  
21 or anticipate a line over to bring in Alaskan  
22 gas. It is mentioned only -- the possibility is  
23 mentioned only because some have said to us that  
24 there may be a deficiency in our proposal, because  
25 while it is directed toward obtaining this, connecting  
26 this to new frontier source of gas to the Canadian  
27 systems, it does nothing as it now stands to provide  
28 for the movement of Alaskan gas and it may be,  
29 it is suggested, in Canada's interest, taking  
30 everything into account, to negotiate for other



1 valuable considerations to be given by the States  
2 to negotiate some right of access across western  
3 Canada for the movement of Alaskan gas or even some  
4 transportation service for the movement of Alaskan  
5 gas, and so that we would not be on record as being  
6 totally exclusive of that possibility, we have  
7 been careful to say that if we were asked or  
8 instructed by the Government, if a certificate were  
9 conditioned on making arrangements to move some  
10 Alaskan gas, that this project could do it  
11 but that is all we are saying, we are in now way  
12 applying at this stage for a line over across the  
13 Delta to bring gas from Alaska.

14 Q Mr. Blair, in part V  
15 of your application, I don't want to go into the  
16 details, but there's a section 6 entitled "Impact  
17 Prediction". The final sentence of that section  
18 says, "Site specific particulars to be obtained  
19 through the Applicant's ongoing research program  
20 will be incorporated into the preparation of the  
21 final project design and in the development of  
22 more definitive protection measures to cope with  
23 spatially and temporarily unique environmental  
24 problems. "

25 A Yes.

26 THE COMMISSIONER: Did  
27 Mr. Gibbs write that?

28 MR. GIBBS: Great sentence,  
29 sir, I wish I did.

30 MR. TEMPLETON: I am not



1 going to ask you what that means, but that really wasn't  
2 the purpose of my question, to make a facetious  
3 comment, but does this mean that you will produce  
4 site specific undertakings to prevent environmental  
5 damage? I don't believe you have done that to  
6 date and I wonder if that is what that says.

7 A Yes, I think that's  
8 what -- I think that's a correct interpretation of  
9 the sentence. I would prefer, if I might to defer  
10 to our witnesses on this volume who will be led  
11 by John Burrell and then if in a clean up way as  
12 a policy witness if there is anything left over come  
13 back to it then. I don't really have anything  
14 more to offer to it right at this stage, but they  
15 may want to elaborate or expand on that part of  
16 the filing.

17 Q Well, I think the  
18 purpose of this is to --its all very well to talk  
19 about generalities, but when you come down to,  
20 for example, I think somewhere you say you would  
21 remove gravel from river deposits or something like  
22 that at times and that most of it would come from  
23 shore deposits, but if that particular gravel  
24 bar is used as a staging area for water fowl,  
25 it has considerable environmental significance,  
26 whereas the next one may not and I think any applica-  
27 tion must get down to those specific things that say  
28 what you will do at that particular site and  
29 what you won't do.

30 A Well, I am glad that



S.R. Blair  
Cross-Exam by Templeton

1 we are forewarned of your interest in this and I  
2 am sure that our witnesses will respond to you in  
3 a particular way when they appear.

4 Q My final question has  
5 to do with and I think that it may be unfair unless it  
6 involves a policy decision, it's only the policy  
7 that I am concerned about, and in the discussion  
8 of the impact in part V, you list various bibliographies  
9 of where your people have obtained information and  
10 there is quite a lot of -- a number of references  
11 to the Board's interim reports, but I don't notice  
12 any reference to the final report.

13 Now, there is no  
14 no reason why you should list it as a reference  
15 unless of course you are trying to disassociate  
16 yourself from the site specific recommendations  
17 that are contained in the environmental atlas  
18 and in the volume entitled "Towards an Environmental  
19 COde", and I just wondered is there a policy in  
20 this regard?  
21  
22  
23  
24  
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S.R. Blair  
Cross-Exam by Templeton  
Cross-Exam by Anthony

1 A No, there is not, I'm  
2 certain that the absence of the reference is not an  
3 indication of any policy. It shouldn't imply any atti-  
4 tude toward the last report of the Environmental Protec-  
5 tion Board.

6 MR. TEMPLETON: Thank you, Mr.  
7 Blair, That's all the questions I have, Mr. Commissioner.

8 THE COMMISSIONER: Thank you,  
9 Mr. Templeton.

10  
11 CROSS-EXAMINATION BY MR. ANTHONY:

12 Q Mr. Blair, can I perhaps  
13 start by saying I look forward to your re-attendance  
14 following the 10 or 12 panels in this phase that will  
15 be called by Foothills, since I anticipate that we  
16 will develop a Blair bag of policy questions much like  
17 we developed a Home bag of policy questions as we  
18 go through these various panels. Therefore I think  
19 my questions to you will be quite general and deal  
20 with the broader issues.

21 As requested in your reference  
22 to this Inquiry you concentrated and you will be  
23 concentrating on the difference between the Foothills  
24 situation and the situation of Arctic Gas, but I would  
25 like to talk about two similarities, and perhaps you  
26 can elaborate any differences involved in them, but  
27 in the general terms there are two major features at  
28 least that are common, and one is that you both propose  
29 to use the Mackenzie Valley corridor, and secondly, you  
30 both propose to build a chilled buried pipeline.



S.R. Blair  
Cross-Exam by Anthony

1 Dealing with the first question  
2 of the use of the Mackenzie Valley, did Foothills do  
3 any examination of alternate routes outside of the valley?

4 A The direct answer has  
5 to be "No" but I think I need to explain a little.  
6 Foothills has existed as an applicant now for -- since  
7 about early September or so, or October. Well, not  
8 that, the Foothills organization has been working  
9 since for a little less than a year. So by the time  
10 it existed, we had already accumulated the four or  
11 five years of examination of routes through the old  
12 Gas Arctic Group and so on, and so within Foothills  
13 work we have stayed with the route that we felt was  
14 the best from among a number of alternates. So we  
15 haven't seriously examined a variety of main routes  
16 through Foothills, but maybe what is -- while that  
17 is the literal answer, maybe you want a more relevant,  
18 you know, to give you the more general answer about  
19 what these people have been working on over the five  
20 years, and yes, we did look at every conceivable route  
21 and mode, starting in 1970.

22 Q So the examination of  
23 alternatives in the Mackenzie Valley is basically the  
24 work that was done and the information that was  
25 available through the Arctic Gas people.

26 A Well, through the original  
27 Gas Arctic people, I'm sorry those names are so close  
28 that a distinction may not jump out all the time, but  
29 through the original Gas Arctic Systems Study Group,  
30 as it existed in '70, '71, '72, and then through to a



S.R. Blair  
Cross-Exam by Anthony

1 degree to what was done in the Arctic Gas Study Group  
2 in '73 and '74.

3 Q But no research has been  
4 done by you since you branched off on your own with your  
5 own application?

6 A I don't believe so, no  
7 I don't remember our doing any, and I don't really  
8 think we would because you know by that time we'd  
9 pretty much settled down onto -- as pipeliners, what  
10 we felt was the best pipeline route.

11 Q And in determining the  
12 question of route selection in the Mackenzie Valley  
13 corridor, did you do any studies to compare and consider  
14 the effect of your pipeline route viz a viz any other  
15 transportation systems, whether they were highways or  
16 other pipelines in the Mackenzie Valley; or is this  
17 again just the material that was assessed at the time  
18 you were part of the Arctic Gas group?

19 A Well no, the answer is  
20 yes, we did make such comparisons. I think one of  
21 the very first things we did in 1970 was to get a  
22 study from an organization that was led by the Mannix  
23 Engineering Companies in Alberta on the whole corridor  
24 concept of gas pipelines, highways, railways, oil  
25 pipelines, what their inter-relationship would be if  
26 they all eventually occurred as projects, and how  
27 they might best be routed, and which side of the  
28 river, I mean east or west of the Mackenzie River, and  
29 what effect, you know, one going ahead would have on  
30 the others. We were deeply into that in 1970 and '71.



S.R. Blair  
Cross-Exam by Anthony

1 Q But again there were no  
2 independent studies done by Foothills as distinct from  
3 the studies that were done when you were part of the  
4 original application group.

5 A Only what appears in  
6 the filing for Foothills. There is a section on  
7 alternate modes on liquified natural gas, air trans-  
8 port, and of gas, and there's a certain amount of it  
9 in our submission. I believe that's all that has been  
10 done separately by Foothills, and it's not exactly  
11 on the subject that I believe you and I are discussing.

12 Q The other major feature  
13 is the question of the buried chilled pipeline. Now  
14 was this a given to your engineering consultants when  
15 Foothills prepared its application, or did you go back  
16 and examine this concept to having a pipeline that was  
17 chilled and also buried throughout the entire route?

18 A We went back from the  
19 time and considered everything in the engineering  
20 design of the pipeline from the time that the Foothills  
21 organization was created, we reviewed everything  
22 having to do with the design and engineering and  
23 materials, the location of the pipeline which we  
24 proposed, and considered all of our past work and  
25 produced the application which has occurred here.  
26 The people who have led the preparation of our appli-  
27 cation are the same people who had done our previous  
28 work when we were operator of the Gas Arctic System  
29 Group, so they had their own direct experience as well  
30 as complete access to all of the past studies.



S.R. Blair  
Cross-Exam by Anthony

1 Q So I understand this,  
2 you say the people that you had, your engineering  
3 consultants looked again at this question of whether  
4 or not the pipeline should be buried throughout, and  
5 came to the same conclusion that the Arctic Gas people  
6 did.

7 A Not quite. First of  
8 all, they're not consultants. This decision has been  
9 made for us by our own people, they are led in this  
10 area by Howard Hushion, who was the senior vice-  
11 president in charge of engineering, construction for  
12 Alberta Gas Trunk Line and is presently an executive  
13 vice-president of Foothills; by Ed Mirosh, who is the  
14 manager of engineering at Foothills and has had  
15 construction managerial experience before in the  
16 Alberta Gas Trunk Line, and these are the -- those  
17 and the people working with them are the people who  
18 have decided what we should apply for in terms of  
19 engineering design, and they did so on the basis  
20 of their cumulative work since 1970. They didn't  
21 take anything that Arctic Gas had applied for as  
22 given. What we did do is use a lot of the same route  
23 because that route had evolved gradually over the  
24 years, and originally Gas Arctic and the Northwest  
25 Project Groups, and then the merged group, and a  
26 lot of the route does coincide, and so does the  
27 soil testing and so on along it; but nothing in  
28 pipeline design was taken as given. Our pipeline  
29 design varies considerably from that of Arctic Gas,  
30 very materially.



S.R. Blair  
Cross-Exam by Anthony

1 Q Another policy which you  
2 expounded in your evidence is the policy of avoiding  
3 duplication of existing systems, and I think you were  
4 concentrating in that in dealing with the question of  
5 duplicate pipelines, and would I be correct in suggest-  
6 ing that this policy would apply to using existing  
7 support facilities wherever possible, such as compressor  
8 stations, haul roads and so on?

9 A Yes, it would, and  
10 support facilities of companies in the project and  
11 of others. For instance, in Alberta, a lot of pipeline  
12 companies run their own radio communication systems  
13 -- their own installation, we use the public system  
14 rather than duplicate that. The one qualification,  
15 the only qualification I would make on the general  
16 policy is that where for reasons of social impact we are  
17 discouraged from using the same facilities as the  
18 local population, then we would as a matter of restraint  
19 even duplicate those facilities, and that is starting  
20 to come out a little bit in some of these communities  
21 where they just don't want the wharf or they don't  
22 want the staging area near the community even though  
23 they might make some incidental use of it. So there  
24 is that exception. Otherwise the policy is general.  
25  
26  
27  
28  
29  
30



1 Q And would this policy  
2 of using existing facilities of other operators  
3 in the area include the use of the proposed facilities  
4 of the Delta gathering facilities such as wharves  
5 and barging facilities and ice roads and so on?

6 A As far as we are concerned,  
7 yes, it would. Of course we would have to hear  
8 how the other party felt about it, but as far as  
9 we are concerned the policy would apply.

10 Q And does it also include  
11 the utilization of the proposed Mackenzie Valley  
12 Highway?

13 A Yes, again, with the one  
14 qualification that if for reasons of social impact  
15 we're discouraged from using it, some portions of  
16 it for some purposes, we would respect that,  
17 but we're actually -- as far as we are concerned,  
18 we are all for the Mackenzie Valley Highway, if  
19 the public and the Government decide it should  
20 proceed and would regard it as a useful and a  
21 valuable facility that would reduce the cost of  
22 construction and would even deserve financial  
23 support from the construction project.

24 Q Do your logistics and  
25 construction plans require the Mackenzie Valley  
26 Highway in order to operate on the basis that you've  
27 outlined in your application?

28 A No, they don't require  
29 it. As I recollect, they anticipated to Wrigley  
30 and I think some of the estimates assume that it



S.R. Blair  
Cross-exam by Anthony

1 would be extended, but that isn't policy, that is  
2 just our best assessment at the time of the estimate  
3 and if that doesn't occur, it is just a matter of  
4 adding some tens of millions of dollars to a  
5 \$1,800,000,000 project and not really that significant  
6 overall.

7 Q According to your  
8 advice is a highway, whether it is a Mackenzie Valley  
9 highway or a highway that you would have to construct  
10 necessary in order to construct the pipeline that  
11 you propose to construct?

12 A No.

13 Q And you are satisfied  
14 from the advice that you have that you can  
15 construct a pipeline on the location you selected  
16 without the need for a highway?

17 A Yes.

18 I have said that the  
19 highway would be of value, but that the highway  
20 is not by any means necessary to our project.

21 Q Sorry.

22 A It is not in any way  
23 necessary to our project.

24 Q Thank you.

25 On page seven of your  
26 evidence, in the second paragraph, you, as part  
27 of the introductory clause to an agreement, identify  
28 the western Canadian sedimentary base north  
29 of Alberta saying that this, in addition to the  
30 Alaska resources, that further discoveries may be



1 expected in that basin. Could you just briefly  
2 describe that basin as it relates to the Mackenzie  
3 Valley?

4 A I should have opened  
5 it, I am sorry, you said page seven?

6 Q Page seven, the  
7 second paragraph.

8 A Well, without a map  
9 the basin would be rather larger than the --what  
10 is normally spoken of as the Mackenzie Valley, --  
11 I think -- is that your question? -- And would  
12 extend on the east side from the Precambrian  
13 rock over into the mountains, several hundred miles  
14 in width and extending throughout the entire length  
15 of the Mackenzie River and then on out into the  
16 Beaufort Basin to the north.

17 The current explanation con-  
18 cept seems to be that the potential for discovery  
19 is relatively poor in the southern part of that  
20 basin within the Northwest Territories and that the  
21 potential is much greater, of course, in  
22 the Mackenzie Delta-Beaufort Basin area but geologically  
23 the basin does extend continuously throughout that  
24 entire area.

25 Q We have heard in  
26 earlier evidence that one of the criteria in route  
27 selection is to remain within future possible sources of  
28 gas. Does that play a role in your selection of a  
29 route down the Mackenzie Valley?

30 A Yes, it definitely does.



1 It did so considerably.

2 Q Now, obviously you've  
3 described the significance of the Delta and I thought  
4 that your answer to Mr. Templeton was that the next  
5 step probably would be north into the sea rather than  
6 other places in the Mackenzie Valley basin, or  
7 the western Canadian sedimentary basin in the  
8 Mackenzie Valley. Is that your anticipated -- is  
9 that the way you anticipate future developments will go?

10 A Yes, sort of humbly  
11 because no one knows where those additional gas  
12 strikes will occur and there might be big surprises  
13 in the southern part of the Northwest Territories  
14 or in <sup>other</sup> directions from the Mackenzie Delta, but the  
15 information that we presently have from the  
16 exploration as to inform us, our consultants, and from  
17 talking to other companies is as you have said.

18 Q So as far as the line  
19 down the Mackenzie Valley is concerned, there are no  
20 particular points of obvious future development that  
21 you would therefore want to put your line into that  
22 area?

23 A No, I don't think there are.  
24 We have looked at the gas out at Tedji Lake and  
25 is gas of course there at Norman Wells and I suppose  
26 that anyone who -- looking at a pipeline would  
27 remember that but we end up as a matter of following  
28 main transportation corridors by going pretty close to  
29 Norman Wells anyway, so I don't recollect that there is  
30 any geological reason of future gas discovery that



S.R. Blair  
Cross-Exam by Anthony

1 has influenced the mainline locations.

2 THE COMMISSIONER: Mr. Blair,  
3 when we were in Whitehorse last week Dr. Hemstock of  
4 Arctic Gas reviewed the likely future sources of gas  
5 in the Canadian North and he ranked the likely  
6 future sources of gas in this way: he ranked the  
7 Beaufort Basin including the Mackenzie Delta first,  
8 he ranked the Eagle Plain which apparently is largely  
9 held by Western Minerals, an Alberta company.  
10 It lies southeast of Old Crow. He ranked the Eagle  
11 Plains second and he ranked the -- what I gather  
12 is the northern part of the western sedimentary basin  
13 along the Mackenzie River as third. Is that a  
14 ranking that in a very general way you would subscribe  
15 to?

16 A No, on our advice  
17 we would rank the -- as sources of supply to a  
18 system such as we are proposing we would rank the  
19 Mackenzie/Beaufort Basin first. We would rank the  
20 Arctic Islands second.

21 THE COMMISSIONER: He left the  
22 Arctic Islands out of this. Forgive me -- we were  
23 talking about the western Arctic Mackenzie Valley.

24 A But he would then  
25 apparently suppose that there would be no supply  
26 into this system from the Arctic Islands and we would  
27 differ with him on that. And then -- we put the  
28 Peel Plateau or Eagle Plain further down the list.  
29 We'd put the southern part of the sedimentary basin  
30 in the Northwest Territories up ahead of that, maybe



S.R. Blair  
Cross-Exam by Anthony

1 about third and put the Peel Plateau , Eagle Plains may-  
2 be fourth or fifth, but nobody knows.

3 THE COMMISSIONER: Well, that's  
4 been made clear enough.

5 MR. MARSHALL: Sir, perhaps  
6 I should just comment to make sure the record is  
7 clear. I think Mr. Hemstock was responding to a  
8 question and was relating some information which  
9 was published I believe by the Department of the In-  
10 terior. I don't know that these are Mr. Hemstock's  
11 figures.

12 THE COMMISSIONER: Yes, he  
13 was reading from the recent report of Department  
14 of the Interior in the United States and it wasn't an  
15 Arctic Gas ranking although I think he did not dis-  
16 pute it.

17 A Well, perhaps similarly  
18 for the record I should say that our information comes  
19 primarily from the explorationists and the reserve  
20 assessment consulting firm of J.L.J. Exploration  
21 Consultants, and then comes secondly from our  
22 other business with oil and gas companies that are  
23 involved in the area on a sort of accumulation of  
24 what they tell us. But we are not an exploration  
25 company ourselves.



S.R. Blair  
Cross-Exam by Anthony

1 Q Both Arctic Gas and  
2 Foothills agree that the Beaufort area is the prime  
3 area at present. Am I right in saying that  
4 the terminus of your line is designed to extract  
5 from the Beaufort Basin and if you have to expand your  
6 line, it would be into the Arctic Islands area that  
7 you've defined as your second choice, rather than the  
8 need to go east into the area traversed by the lateral  
9 proposed by Arctic Gas?

10 A I think you meant west.

11 Q Sorry, west.

12 A Yes. That is our present  
13 concept.

14 THE COMMISSIONER: Well, just  
15 so that I understand you, by "The Arctic Islands"  
16 you're speaking of the gas that has been proven, if  
17 that's a permissible expression in this context, in  
18 this Sverdrup Basin, is that the area of the Arctic  
19 Islands that you're thinking of?

20 A I'm thinking of two  
21 prospects. One is that; the other is the potential  
22 of Banks at Victoria Islands which are so approximate  
23 to the delta as to be reasonably capable of connection  
24 by conventional pipelines. That is very much prospec-  
25 tive subject at this stage.

26 Q Oh yes, no doubt, but  
27 under the pipeline guidelines we, I think, are bound  
28 to consider what the impact of a gas pipeline would  
29 be in terms of enhanced exploration and likely future  
30 supply legs, and you are really saying that Banks



S.R. Blair  
Cross-Exam by Anthony

1 Island and Victoria Island might well be linked up  
2 to the Foothills line, and that the gas in the high  
3 ARctic, which is Pan-Arctic gas, and they keep publish-  
4 ing maps with lines running down west and east of  
5 Hudson Bay, you're thinking of that gas as well which  
6 current estimates tell us is larger in volume than  
7 Beaufort Basin gas. They are confronted with  
8 engineering difficulties, I understand, that haven't  
9 yet been surmounted. At any rate, that's what we  
10 understand what you're thinking of in a long-term  
11 context, dependent on a great many things.

12 A Perhaps I should just  
13 explain a little more.

14 Q Certainly if you feel  
15 it is relevant.

16 A The assessments of what  
17 will happen with the Arctic Island gas and when, of  
18 course, will change from time to time, as all projects  
19 and development should to meet the latest information,  
20 and at least currently this summer a good deal of  
21 the thinking is that at least some of the Arctic Island  
22 gas will be removed as liquified natural gas, that --

23 Q By tanker?

24 A By tanker. Well, there  
25 is some talk of by air, but most of the talk -- most  
26 of the speculation is by tanker, and because some of  
27 the islands are considered as still impractical,  
28 considered by some people, and I'm not meaning to  
29 downgrade at all the very good efforts of the Polar  
30 Gas group in their pipeline studies, which I think



S.R. Blair  
Cross-Exam by Anthony

1 deserve every encouragement; but some people in the  
2 industry believe that some of the islands at least  
3 will not be practical to connect by pipeline, and that  
4 with gas, as some of it is, which is very sweet and  
5 with no oil in it, could be practically removed in a  
6 relatively short period which all the more suggests  
7 removal through another mode than by building a  
8 pipeline, and our own conjecture is that if some of  
9 that gas is to go out by tanker, that some of it may  
10 very well come down to the head end of the nearest  
11 pipeline system. There are others who argue that  
12 once you get gas liquified into the tanker, the thing  
13 to do is move that tanker as far as you can to  
14 England or some place, and your economics favor that.

15 But there is a good deal of  
16 argument both ways on that question, and I think that  
17 it is quite within the possibility that some of that  
18 gas will be shuttled over to the head end of the  
19 Mackenzie Valley line. So that's one line of our  
20 thought. The other is that Banks and Victoria Islands,  
21 while they are greatly discounted by some companies  
22 as prospects for oil and gas, they are not by all  
23 companies and I think it's possible that they will be  
24 sources of supply to the Mackenzie Valley line at  
25 some time in the future.

26 THE COMMISSIONER: Thank you.  
27 Carry on, Mr. Anthony.

28 MR. ANTHONY: Q Mr. Blair,  
29 the Environmental Protection Board was involved in an  
30 assessment of the Arctic Gas project during the



S.R. Blair  
Cross-Exam by Anthony

1 planning of the project. Do you consider<sup>as</sup> the matter  
2 of policy that this independent inter-disciplinary  
3 approach is a practical and acceptable method of  
4 proceeding?

5 A I don't know what to  
6 do about it now. Of course when we were -- Carson  
7 Templeton and I were very much on the ground floor  
8 of the establishment, and nourishment of that good  
9 Board and I personally always thought very highly of  
10 it, and still do. Then of course when we left Arctic  
11 Gas, it was still working for Arctic Gas, and that  
12 was just the way it was. We just haven't really got  
13 around to considering whether there should be some  
14 official relationship between it and Foothills. I  
15 don't think either of us have really got around to  
16 considering it. But we will, and my own personal  
17 view is that it's an excellent organization, that it's  
18 -- and I'm generally supportive of its work and concept.

19 Q I didn't want to tie you  
20 necessarily to any particular group. I was dealing  
21 more in a general planning mechanism of whether you  
22 as a matter of policy thought that this method of  
23 proceeding with an independent inter-disciplinary  
24 environmental assessment as compared to the in-house  
25 or consultative work that is a traditional approach,  
26 whether this was a valuable technique to employ and  
27 whether you intended to employ it.

28 A Well, I personally com-  
29 pletely identify with, and support it. As I say, that's  
30 what we did, but -- and I guess you could transpose



S.R. Blair  
Cross-Exam by Anthony

1 that onto the Alberta Gas Trunk Line as a whole.  
2 But I just haven't yet referred the question to the  
3 directors of Foothills or to our partner, and it may  
4 be that the circumstances are different in some way  
5 from what they are. We just haven't examined that,  
6 but as far as looking, you know, as opinion has  
7 developed to date I'm very much in favor of it.

8 Q What about following  
9 regulatory approval, have you directed your mind to  
10 the sort of regulatory body you as a matter of policy  
11 would recommend or approve of to review and control  
12 the construction of a pipeline?

13 A A little, and not with  
14 any great concern. We live with a lot of regulatory  
15 bodies, a lot of separate ones. I mean we build pipe-  
16 lines and operate them with various regulatory auth-  
17 orities that we must satisfy, and I've heard it said  
18 that as much as possible by others that they would  
19 recommend that all the authorities be consolidated  
20 into a single agency. I don't feel as strongly about  
21 that as others have expressed. I mean, sure, it's  
22 nice and efficient to only have one person to deal  
23 with, but it's not that kind of a world, and we just  
24 live with whatever authority is constituted at the  
25 time. I don't mean to undermine our, you know, want-  
26 ing to say we'd like to be as efficient as possible  
27 too, but I don't -- you know, in avoiding a lot of  
28 duplicatory efforts and then having too many people  
29 that can stop a job and perhaps through their number  
30 interfering with progress. It's a point but I don't



S.R. Blair  
Cross-Exam by Anthony

1 have any particular suggestion about it.

2 We're used to living with the  
3 duly constituted authorities, whoever they are and  
4 however numerous they may be.

5 Q From your point of view,  
6 then, your ability to execute your project is not  
7 dependent on any form of unified regulatory authority.  
8 You'd be satisfied to proceed in the fragmented auth-  
9 ority that presently exists and undoubtedly would exist  
10 if no changes were made.

11 A Oh yes, we are satisfied  
12 with the National Energy Board as an authority, and  
13 with the Government of Northwest Territories as  
14 an authority, and the Government of Canada as an author-  
15 ity, and we would -- and with their various functional  
16 representations, and they exist and that's fine.



1 Q In other material  
2 that we had from Foothills you outlined a philosophy  
3 stating that one of your philosophies in route  
4 selection was avoiding areas of special  
5 environmental interest or sensitivity. I was  
6 wondering what you would describe was meant in that  
7 phrase and indicate with specific examples the  
8 sort of areas that you are talking about.

9 A Well, I can -- I mean  
10 that I am not unfamiliar with the subject, there  
11 will be others who will be much more -- far more  
12 familiar with the particular and the examples --  
13 you know, and so that I don't appear ignorant on it,  
14 I will say that we have looked at areas of special  
15 sensitivity as fish breeding grounds, wildfowl  
16 breeding grounds and spawning beds and fish  
17 spawning beds and centres of high use of mammal  
18 or animal, fish or fowl breeding and populations  
19 and we've looked at soil conditions that might  
20 be more susceptible in more places than others to  
21 erosion or to the more serious kinds of deterioration  
22 through removing the insulation from above perma-  
23 frost and matters of that kind.

24 Q And this work you say  
25 was done prior to the selection of the Foothills  
26 pipeline route?

27 A Not entirely. A lot  
28 of it, you know, accumulated through the years of  
29 Gas Arctic and Arctic Gas work and was done prior.  
30 But we have changed the Foothills pipeline route I



1 believe, if I remember correctly, in one or two  
2 locations in which the location was chosen first  
3 and the environmental tests were made subsequently,  
4 but others can give you a much more particular  
5 answer to this than I am giving you.

6 Q I am sure that we  
7 will get more specific, I just wanted to determine  
8 that when you went off on your own and decided on  
9 the Foothills pipeline route, you in fact did do  
10 the sorts of studies in an attempt to identify  
11 these areas before you actually selected the route  
12 that is in your application?

13 A Well, that is what I  
14 am being careful with, because I am not sure  
15 if that is so. Of course when we looked at changing  
16 the route it was substantially for environmental  
17 reasons that we changed it. In the first instance,  
18 but they would have been general reasons, you know,  
19 an awareness of a general condition in the area  
20 and wanting to go around it and I am not certain  
21 that we did all the field work though before we  
22 changed the line on the map. We may have changed  
23 the line on the map and then have gone into verify  
24 our field assessment afterwards, and I am just being  
25 careful that I don't say that incorrectly to you.

26 Q In an answer to a  
27 question by Mr. Templeton you explained why you  
28 had the statement in your evidence that you are  
29 prepared to consider the question of moving  
30 Alaska gas in certain circumstances and I gather



S.R. Blair  
Cross-Exam by Anthony

1 what you were saying there was that you will do it  
2 if you are directed or if it is a condition of  
3 approval of your pipeline. Are there any other  
4 conditions that would make Foothills reconsider its  
5 decision not to go west of the Mackenzie Valley  
6 Delta?

7 A Yes, I didn't mean  
8 to go so far as to say we would only do it if it  
9 were made a condition of our receiving a certificate.  
10 I don't, because I don't really think that it would  
11 occur that way at all. I think we would do it if  
12 we were told by senior governmental authorities  
13 for Canada or the National Energy Board that it was  
14 considered desirable as a matter of Canadian purpose  
15 to offer the movement of some Alaskan gas across  
16 western Canada. The communication could be --  
17 wouldn't have to be so formal as a condition in  
18 the certificate and I suppose that if we were  
19 asked by a company who has some gas in Alaska  
20 to -- or was entitled to purchase some gas in Alaska --  
21 to move it to a Canadian market, or a United States  
22 market, if we were asked to provide the service of  
23 it extending a connection over to pick it up that we  
24 would then consider the request and if it appeared  
25 good to us we would apply -- we would start through  
26 another series of hearings and applications to apply  
27 to build such a line. -- And the last thought isn't  
28 entirely, you know, hypothetical, there was a stage  
29 in which there was a concept of loaning some  
30 gas from Alberta and replacing it with Alaskan gas



S.R. Blair  
Cross-Exam by Anthony

1 later as was described yesterday in connection with  
2 the Pan Alberta Company and those sort of things  
3 are possible, but there simply is no such proposal  
4 before us and no such communication from the  
5 Government of Canada before us at the moment.

6 Q Well, when we've  
7 been discussing the question of looping with Arctic Gas  
8 we talk in terms of that is not part of the approval  
9 that we are presently seeking, but that is  
10 a probable event. Do you put the possibility of  
11 Foothills expanding westward in that same level  
12 or is it a much more remote possibility or a more  
13 real possibility?

14 A I think it is a real  
15 possibility. I don't think it is remote. It's only  
16 a possibility that no such proposal exists at the  
17 moment. To be quite sure we are together on this,  
18 I had not said that I regard looping of Foothills  
19 to move Mackenzie Delta gas as probable, I think  
20 you talked about the probability of looping Arctic  
21 Gas, I hadn't said anything about that either.

22 But if you are really  
23 directing this as to the degree of possibility  
24 of our being asked to at some stage to send out a  
25 western connection and pick up gas from Alaska I would  
26 say that it is a real possibility, but only a  
27 possibility of this proposal.

28  
29  
30



S.R. Blair  
Cross-Exam by Anthony

1 Q Have you studied the  
2 possible routes that Foothills would propose if it  
3 was to build such a lateral?

4 A No.

5 Q Have you done any economic  
6 studies of the feasibility of such a lateral, given  
7 tariff and another financial considerations that we've  
8 been discussing at length?

9 A Yes, we have, and I  
10 suppose to keep these answers consistent, I should say  
11 -- when I said "No" on the routes, I meant not on the  
12 terms of down on the ground field location studies but  
13 lines have been drawn on maps and economic feasibility  
14 has been -- is being -- has to some degree been studied  
15 and is being studied further.

16 Q You said that the  
17 question of route has not been decided, but there have  
18 been general areas, I gather, identified as possible  
19 routes. Could you describe where these are in relation  
20 to the various alternatives Arctic Gas has been  
21 describing to us?

22 A I don't think I'd add  
23 anything myself to trying to describe those. We may --  
24 I think there are other witnesses who might say something  
25 useful, but I don't really have anything useful to say  
26 myself about them.

27 Q Well, first of all you  
28 say there are lines on maps indicate possible areas.  
29 Is that something that can be made available to this  
30 Inquiry so we can --



S.R. Blair  
Cross-Exam by Anthony

1 MR. GIBBS: The lines on  
2 maps are the preliminary work towards doing these  
3 economic studies. There is certainly no finality, no  
4 more final than taking a line on a map and saying, "You  
5 know, we might go this way." I don't think they would  
6 be any help at this stage.

7 MR. ANTHONY: Mr. Commissioner,  
8 if I can perhaps explain what I was getting at and  
9 my friend can advise whether it would assist us, but  
10 what I'm really trying to determine is whether or not  
11 Foothills, if it looks from the east-west, is looking  
12 at the same general routing as Arctic Gas is, as  
13 they sit on the west and look east; or are they  
14 considering southern Yukon alternatives and so on?

15 MR. GIBBS: We're just not at  
16 that point, sir. We can say we're looking from west  
17 to east, or east to west. That's about as far as we've  
18 got.

19 THE COMMISSIONER: Principally  
20 not south, I think.

21 MR. GIBBS: Yes.

22 THE COMMISSIONER: I think Mr.  
23 Blair answered that fairly comprehensively. What  
24 more can we learn really, if these things are seeds  
25 in the minds of oil and gas pipeline executives around  
26 the country, I suppose, and in the minds of people in  
27 the government, but they're in no position to tell us  
28 anything that takes us in any meaningful way beyond  
29 what Mr. Blair said earlier, are they? I'm not  
30 shutting you off, but we can have a round-table



S.R. Blair  
Cross-Exam by Anthony

1 discussion on the likely sources of gas, and all  
2 draw lines on the map. They do that in the newspapers  
3 every day. Good luck to them.

4 MR. ANTHONY: I was merely  
5 attempting to determine how far along the line they  
6 had gone, and in particular whether they had narrowed  
7 the scope into any particular area; and if their  
8 answer is that they -- that these lines are a spaghetti  
9 ball of every conceivable option, it won't assist us.  
10 If they were more specific I thought they perhaps  
11 would.

12 THE COMMISSIONER: Well, are  
13 you in a position to be more specific than you were  
14 when you answered me?

15 A No, it's well said to  
16 say the lines cover every possible option at this  
17 stage.

18 MR. ANTHONY: That's all the  
19 questions I have, thank you.

20 THE COMMISSIONER: Well, it's  
21 12:30. Let's adjourn for lunch until two and we can  
22 complete Mr. Blair's evidence this afternoon, I'm sure.

23 (PROCEEDINGS ADJOURNED TO 2:30 P.M.)  
24  
25  
26  
27  
28  
29  
30



(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. SCOTT: Mr. Commissioner, I apologize for being late. It would be useful, I think, at this stage to announce the timetable that is proposed for the Inquiry for the balance of the year and to give the Inquiry --

THE COMMISSIONER: That should wind it up then, should it?

MR. SCOTT: I am sure, Mr. Commissioner, you have seen my answers in the press when questions of that have been made.

I think I can also give the Inquiry a brief outline of the order of business.

In the week of September 1st there will be no sitting.

In the week of September 8th there will be a community hearing at Fort Simpson, Wrigley, and Jean Marie River.

In the weeks of September 15th and 22nd there will be formal hearings at Yellowknife.

In the week of September 29th there will be no sitting.

On the week of October -- in the week of October 6th there will be a community hearing in the South Slave area.

In the weeks of October 14th and 20th there will be formal hearings at Yellowknife.

The week of October 27th there will be no sitting.

In the weeks of November 3rd,



1 the 10th, and the 17th there will be formal hearings  
2 at Yellowknife.

3 The week of November 24th  
4 there will be no sitting.

5 In the weeks of December 1st,  
6 8th and 15th there will be formal hearings at Yellow-  
7 knife.

8 Then the Inquiry will adjourn  
9 over the holiday, resuming, we anticipate, on Monday,  
10 January 5th.

11 Now, during that period we  
12 would propose to continue with the evidence of the  
13 applicant, Foothills, until it is completed in chief.  
14 Then it will be anticipated that the participants,  
15 including Commission counsel in the order that has  
16 been stipulated, will call Phase 1 evidence, and during  
17 that process I've undertaken to my friends that I will  
18 call for cross-examination purposes any members of the  
19 Assessment Group who has evidence to give on Phase  
20 1 matters, that they desire to have recalled, or have  
21 called, and I have written them, as I say, to that  
22 effect, and I will also recall for cross-examination  
23 any person who gave evidence in the overview hearings  
24 on matters that in any part relate to Phase 1.

25 After the participants and  
26 Commission counsel's evidence has been heard, the  
27 applicants will call whatever reply evidence may be  
28 regarded as desirable. Thereafter I would propose to  
29 move directly to wind up the alternative corridor  
30 evidence that was commenced at Whitehorse last week



1 and I would anticipate that at that stage the appli-  
2 cant, Foothills, would have determined whether it  
3 proposed to lead any alternative corridor evidence,  
4 and if it proposes to do so, it would do so at that  
5 time.

6                               Thereafter, we would move  
7 onto Phase 2. I have copies of the summary of the  
8 dates, which I'll make available to the secretary,  
9 and to all counsel.

10                              MR. MARSHALL: Mr. Commissioner,  
11 before leaving that point, there was some discussion  
12 among counsel last night with respect to clearing up  
13 matters that had not been finished before we got to  
14 Phase 2, and I expressed the view, which I think found  
15 some support, that one of the matters that had not  
16 been dealt with and that it might be appropriate to  
17 conclude before turning to Phase 2 was the cross-  
18 examination of E.P.B. witnesses, and it's my suggestion  
19 that it might be appropriate to deal with that  
20 subject before we turn to the succeeding phases of  
21 the Inquiry.

22                              THE COMMISSIONER: I think that  
23 if I might say something about that before calling  
24 on other counsel, subject to what everyone else may  
25 wish to say, I would be inclined, Mr. Marshall, to  
26 say that Dr. Adam might be recalled for cross-examination  
27 since his evidence clearly bore on Phase 1. He came  
28 -- he proposed some changes in the geotechnical approach  
29 that Arctic Gas was taking to the pipeline. It seems  
30 to me that the balance of the Environment Protection



1 Board membership were dealing with matters of  
2 environmental and social impact, largely environmental,  
3 but to some extent social impact, and I'd be inclined  
4 to let them be cross-examined appropriately in each  
5 phase. The only exception to all of that would be  
6 Mr. Templeton, whose evidence ranged over each phase,  
7 and properly so, if I may say so. But he is with us  
8 sufficiently often that I think he can be installed  
9 on the witness stand for cross-examination at any  
10 time convenient to all concerned when he's here.  
11 That's the way I would be inclined to approach it.

12 I'm certainly open to  
13 suggestions, but any suggestions, Mr. Scott?



1 MR. SCOTT: Mr. Commissioner,  
2 I regard my function as to propose and I proposed  
3 and I excluded the cross-examination that Mr.  
4 Marshall now seeks. I stand firm in that view if  
5 other counsel disagree, and you are prepared to  
6 hear them, I suppose informally it might be  
7 discussed at some early opportunity, but I would  
8 prefer the proposal, needless to say, that I advanced.  
9 I think that anybody who has attended the counsel  
10 meetings will recognize that there is little  
11 virtue to cross-examining Mr. Templeton, but as you  
12 say, he is here.

13 THE COMMISSIONER: Well,  
14 I think that I will take it that there is no serious  
15 dissent to Mr. Scott's proposal for the schedule  
16 of sittings and the order in which we should tackle  
17 the evidence for the remainder of the year and  
18 the only alteration I would make in Mr. Scott's  
19 proposals is the one that I just outlined to Mr.  
20 Marshall having to do with cross-examination of  
21 the Environment Protection Board membership.

22 MR. SCOTT: I should say  
23 one other thing, Mr. Commissioner, just so, it being  
24 your Inquiry, you will be fully in the picture.  
25 Mr. Marshall suggested that in view of the fact that  
26 there are now two applicants rather than one,  
27 there might be some amendments to the procedural  
28 rules that he would regard as desirable. I therefore  
29 invited him and Mr. Gibbs if he was advised to  
30 let me have any draft changes that they proposed



1 for circulation informally to the participants and  
2 we will hopefully conclude that process as quickly  
3 as possible, so if there are any amendments to the  
4 rules of proceeding we will ask you to make them  
5 shortly.

6 MR. MARSHALL: Sir, it might  
7 be appropriate if I spoke to that just very briefly.  
8 It seemed to me and to my client that the status  
9 of Foothills has obviously been changed by the referral  
10 of the application to this Inquiry and it might be  
11 appropriate therefore to examine the rules,  
12 particularly those relating to the filing of synopsis  
13 of evidence to be given by witnesses and panels  
14 of witnesses. The fact being that it might be more  
15 appropriate given the changed nature of the Inquiry  
16 to have both Canadian Arctic Gas and Foothills  
17 file their evidence pertaining to a particular  
18 phase or topic simultaneously and as discussed  
19 last evening among counsel, I am prepared to spell  
20 out any proposals in a little more detail by way  
21 of memoranda circulated among counsel and it may  
22 well be that some agreement can be reached and we  
23 can come before you with an agreed revision of  
24 the rules that we might ask you to make, sir.

25 Failing such agreement I  
26 expect that this is a matter that will be the  
27 subject of submission before you and I want to make  
28 it clear to Mr. Gibbs that he is on notice.

29 MR. GIBBS: It is clearly  
30 understood, sir, and perhaps I can reserve my comments



1       until I see what Mr. Marshall proposes.

2                               THE COMMISSIONER: Well,  
3       I certainly understand that you might want to  
4       propose revisions to the rules now that we have two  
5       applicants       to insure that each is treated  
6       fairly.

7                               All right, where are we.

8                               MR. GIBBS: Mr. Commissioner,  
9       before my friend begins, Mr. Goldie had asked for  
10      some dates with respect to Pan Alberta matters.  
11      We have had our files searched and I am able to  
12      advise as follows: that sometime prior to September 5,  
13      1974, the purchaser of the gas that Pan Alberta  
14      proposed to export from Canada was advised that the  
15      purchase contract would be terminated. On September 5,  
16      1974, there was a press release announcing that the  
17      gas sales contracts with that gas purchaser had  
18      been terminated.

19                              On September 20, 1974, a letter  
20      went forward to the National Energy Board withdrawing  
21      the application to export gas from Canada..

22                              MR. GOLDIE: My friend doesn't  
23      have the date of the application?

24                              MR. GIBBS: No, I hadn't under-  
25      stood that to be a date that you wanted, so I don't  
26      have it. If you want it, I will get that also.

27                              THE COMMISSIONER: Yes, would  
28      you get that? I would have thought that it was under-  
29      stood that we were going to have it.

30                              MR. BELL: Just one small



1 matter before I proceed with cross-examination.  
2 The schedule which Mr. Scott read out just a few  
3 minutes ago, he did make counsel aware of that  
4 schedule last night in his proposal and he asked me  
5 if I could find out if there was any amendment  
6 to that that we would propose and report to him  
7 before noon hour. Unfortunately the people in our  
8 organization who are chiefly concerned with community  
9 hearings are out preparing for community hearings  
10 and I didn't get a chance to talk to them until just  
11 a few minutes ago, and so I haven't had a chance  
12 to comply with Mr. Scott's request, but I am informed  
13 that there is a good probability that we may wish  
14 to schedule -- to ask that community hearings be  
15 scheduled in the North Slave region sometime during  
16 the month of November. That opinion has been  
17 expressed to Professor Jackson and he has expressed  
18 his receptiveness to it so I thought that subject  
19 to those remarks, most of the schedule would be  
20 satisfactory to us.

21 THE COMMISSIONER: Well,  
22 that is fine. I think that it was understood that  
23 a week might have to be dropped from formal hearings  
24 to enable us to cover some of the remaining communities.  
25 North Slave is Fort Rae among others, I take it?

26 MR. BELL: Yes, I think  
27 that would include Fort Providence for these  
28 purposes.

29 THE COMMISSIONER: And I  
30 think I should say that we have been given to



1 understand that it is likely that the community hearing  
2 at Inuvik and the other delta communities that we  
3 have not visited should be held sometime in January,  
4 but we're not -- we haven't reached the stage of  
5 preparing timetables for 1976 yet.

6 MR. HOLLINGWORTH: I am  
7 sorry, sir, I didn't quite hear what you said,  
8 should be held --

9 THE COMMISSIONER: In  
10 January. That's tentative, but I just -- Mr. Waddell  
11 has talked to the people up there and that's what  
12 he advises me.



S.R. Blair  
Cross-Exam by Bell

1 S.R. BLAIR, resumed:

2 CROSS-EXAMINATION BY MR. BELL:

3 Q Mr. Blair, --

4 THE COMMISSIONER: And I should  
5 add, Mr. Bell, that -- so it's not thought that's  
6 been overlooked, Mr. Waddell has been making plans  
7 to hold community hearings in the evening in September  
8 and October, at times convenient to the people of  
9 Yellowknife, for the people of Yellowknife and of  
10 Detah so that it will not be thought that that has  
11 been overlooked.

12 MR. BELL: Very well.

13 Q Mr. Blair, I take it  
14 that in preparation for these hearings and others,  
15 the Foothills organization had some socio-economic  
16 input into its assessment and its proposals.

17 A Yes.

18 Q Could you tell us how  
19 socio-economic factors are brought into Foothills  
20 decision-making process through its corporate organiza-  
21 tion, its management structure?

22 A Yes. The person in  
23 Foothills who has charge of those studies is John  
24 Burrell. Mr. Burrell is -- has the title of director  
25 of operations, which we consider at this stage to be  
26 a title and responsibility anticipatory of the complete  
27 operation of the pipeline system if Foothills is certi-  
28 fied, and so his scope includes the planning of the  
29 future operation of the pipeline, and also matters  
30 including the socio-economic studies.



S.R. Blair  
Cross-Exam by Bell

1 Q But who would he report  
2 to?

3 A Mr. Burrell would report  
4 in an official way to Howard Hushion, who is an  
5 executive vice-president of the company, and to the  
6 extent that each of us has one person who we would  
7 give as the person reporting to, that's the correct  
8 answer. Mr. Burrell also works very closely with  
9 all of the chief officers and directors of the company,  
10 and attends the meetings of the Executive Committee of  
11 the Board of Directors and discusses his principal  
12 recommendations with that Executive Committee, at  
13 its monthly meetings. The Executive Committee I  
14 mentioned yesterday or the first day consists of the  
15 chairman of the Board of Directors, Mr. Kelly Gibson;  
16 the president of Westcoast Transmission, Ed Phillips;  
17 Robert Pierce, the executive vice-president of our  
18 Alberta Gas Trunk Line Company, and myself, and it is  
19 the final level of decision-making in Foothills because  
20 it covers both the representation of the Board of  
21 Directors of Foothills, and obviously the two  
22 principal officers of each of the two companies who  
23 are supporting Foothills financially, and with their  
24 staff effort.

25 Q Where would Mr. Burrell  
26 get the information and opinions on which he would base  
27 his recommendations that you bring to the Executive  
28 Committee?

29 A Well, again anticipating  
30 that he can answer the question better when he appears



S.R. Blair  
Cross-Exam by Bell

1 as a witness, I'd say in the meantime that he gets it  
2 to a degree from his visits in the Northwest Territories,  
3 on the advice of John Ellwood, who is resident in the  
4 Northwest Territories and reports to John Burrell,  
5 and we have some other people in the Territories who  
6 report to Mr. Elwood, and he gets them from a consultant  
7 firm that he has engaged for these purposes, and from  
8 some discussion I know with other consultants who have  
9 worked for us in the past. That's my recollection of  
10 his main sources of input.

11 Q Can you recall the  
12 name of the consultant firm that you just mentioned?

13 A I know that the princi-  
14 pals are Francis Blackduck and a lady in Inuvik whose  
15 name I forget just at the moment, I'm sorry I had it  
16 in my mind but it's just gone out of my mind for a  
17 moment. I'm sure he can -- or perhaps counsel can.

18 MR. GIBBS: Jensen, I  
19 think, Mr. Blair.

20 A Yes, Maureen Jensen.

21 MR. BELL: Q And you also  
22 mentioned some others that Mr. Ellwood works with.  
23 Can you tell me who they are?

24 A No, I don't remember  
25 by name. I believe he has had some discussions with Pat  
26 Carney, and I don't remember who else. I'm sure he  
27 can give you this elaborately.

28 Q Can you describe for us  
29 the relative weight that would have been given to  
30 socio-economic considerations relative to environmental



S.R. Blair  
Cross-Exam by Bell

1 concerns and matters of pipeline economics or engineer-  
2 ing that went into the route selection decision?

3 A I can't think of a way  
4 to quantify it, so I'm trying to think of a way to answer.

5 Q Well, perhaps I can help  
6 you. Mr. Horte said during his testimony that because  
7 of various qualities; engineering and environmental  
8 factors had a paramount position in that process.  
9 Would you say the same sort of thing about your decision-  
10 making process?



S.R. Blair  
Cross-Exam by Bell

1 A No, I wouldn't use  
2 the word "paramount".

3 MR. MARSHALL: I don't think  
4 Mr. Horte did either, but perhaps we can take this  
5 up with Mr. Bell later.

6 MR. BELL: Well, I think I  
7 recall that he did,

8 THE COMMISSIONER: Well, carry  
9 on.

10 A It's hard to answer, you  
11 know, I was thinking some people would say, "Well, how  
12 much have you spent on it?" But I don't know if  
13 that's the point either, because you could say, "O.K.,  
14 what is the relative weight of a president of a  
15 company?" And you could say, "Well look, he represents  
16 a half of 1% of the salaries paid by the company."  
17 But the relative weight might be a great deal more than  
18 a half of 1%.

19 MR. BELL: Q Are you going to  
20 tell us the salaries paid by your company?

21 A Pardon?

22 Q I'm sorry, I was being  
23 facetious. I was just asking whether you were going  
24 to tell us the salaries that were paid by your company.

25 THE COMMISSIONER: Well, let's  
26 not get into that.

27 A So I don't think I can  
28 measure this for you in budgets <sup>or in</sup> hours of discussion  
29 particularly. I'd say this, that Foothills now of  
30 course is the child of efforts and interest that



S.R. Blair  
Cross-Exam by Bell

1 was originally incurred in these companies, the  
2 Gas Arctic Systems Group and the Mountain Pacific  
3 Group and so on, and the Arctic Gas Group; and from  
4 the beginning we have tended to be, I think, relatively  
5 highly concerned with the socio-economic matters,  
6 very much originally not on our own initiative but  
7 under the not very gentle probing of Pat Carney, who  
8 worked with Gas Arctic in those years, and of other  
9 people here who kept telling us that, "You know, this  
10 is something you guys have got to attend to." So  
11 in '70, '71, '72 we conducted a program of what --  
12 I never liked the word too much, what we called  
13 "visitations" -- but they were visits into communities  
14 and to the Band Councils to describe to them what  
15 we -- who we were, what we did, and what our intentions  
16 were, and to consult with them on matters like route  
17 selection.

18 We regarded that program  
19 as very important. We had really our senior  
20 officers, our top operating man in Alberta Gas Trunk,  
21 Bill Deyell, senior vice-president and a team of  
22 people in the communities doing that. Then that  
23 was discontinued when the two groups were merged and  
24 we had been the operator of the Gas Arctic Systems  
25 Group and did it our way, and then I guess it wasn't  
26 pursued, as far as I am aware, in Arctic Gas, but they  
27 can speak to that.

28 Then in Foothills we again  
29 come to the time of filing an application, and I'd  
30 say we were interested, concerned, I would say have



S.R. Blair  
Cross-Exam by Bell

1 given the matter some serious weight, but I just  
2 don't know how to compare it to the weight given to  
3 other factors. I can't do better than that.

4 Q Well, perhaps I could  
5 put the question to you this way. You stated that you  
6 conducted a series of visits to various communities  
7 in the Northwest Territories, and you consulted with  
8 local residents. Can you tell me, if as a result of  
9 that consultation, there were any changes made in  
10 Foothills' proposal?

11 A The answer is yes, there  
12 were changes made. Well, I wouldn't call them changes,  
13 perhaps that's not quite right. I'm sure there are  
14 results of those visits reflected in the proposal, but  
15 when Foothills has been around for such a short time  
16 it hasn't had time for a lot of changes. It really  
17 has been basically one proposal, but I'm saying that  
18 in a general way, thinking of the proposal as a  
19 whole, and I'm not -- I suppose that that's the nature  
20 of your question, it's a general question.

21 Q Well, I thought that if  
22 you could recall any changes you might be able to  
23 identify them for us.

24 A Well, O.K., I made a  
25 false start, they weren't changes, but I would say that  
26 our employment policies, the initiation of a Business  
27 Advisory Board which we have provided for on the  
28 recommendation of Mr. Burrell, and our intentions for  
29 some particular construction practices and disciplines  
30 are all in part a consequence of our visits to the



S.R. Blair  
Cross-Exam by Bell

1 communities; but as I say, it was a false start to  
2 call them changes because as far as I know they related  
3 to the Foothills proposals from the beginning. They  
4 were consequences to the visits to the communities.

5 Q Can you tell me, sir, what  
6 in your view would be the major social and economic  
7 impacts of the pipeline on the Northwest Territories?

8 A I'm sorry, I was distracted  
9 and missed your question.

10 Q Yes, I just asked you if  
11 you could tell me what, in your view, would be the  
12 major social and economic impacts of a pipeline on the  
13 Northwest Territories.

14 MR. GIBBS: Mr. Commissioner--

15 THE COMMISSIONER: I think  
16 that's the answer being handed to Mr. Blair.

17 MR. GIBBS: -- could he be  
18 excused for a moment, it's an urgent matter?

19 THE COMMISSIONER: Oh yes.  
20 Yes, if you can wait a moment for your  
21 answer?

22 MR. BELL: Certainly.

23 THE COMMISSIONER: Go ahead,  
24 Mr. Blair, we'll wait for you.

25 MR. GIBBS: Thank you very  
26 much, sir, we're ready to proceed.

27 MR. BELL: Well, shall I repeat  
28 the question?

29 A I'm sorry for the distraction,  
30 there is a matter that I knew of and I knew had



S.R. Blair  
CrossExam by Bell

1 to be attended to immediately, and it's been done.

2 Q Should I repeat the  
3 question, sir?

4 A I'd appreciate it, yes.

5 Q I just asked you just  
6 what in your view would be the major social and  
7 economic impacts of a pipeline in the Northwest  
8 Territories?

9 A I'm taking time to think  
10 for just a moment so my answer can be as brief a  
11 summary as practical. Is your question socio-economic?

12 Q Well, you can split it  
13 up.

14 A Or social and economic?  
15 Well, what I'm wondering is are we talking economic in  
16 the sense of socio-economic, or do we mean economics  
17 in general? In total.

18 Q Well, perhaps we could  
19 start with socio-economic and let's see where we go  
20 from there.

21 A Its a big order.

22 THE COMMISSIONER: It is a  
23 big order, and that's really what the Inquiry is  
24 supposed to be doing. Does this get us anywhere, Mr.  
25 Bell?

26 MR. BELL: Well, Mr. Horte  
27 took the opportunity to give us his opinion on this  
28 question and I thought Mr. Blair should have the  
29 same opportunity.

30 THE COMMISSIONER: All right,



S.R. Blair  
Cross-Exam by Bell

1 well I can't argue with that, I guess.

2 A Well, I think there are  
3 two major effects which occur to me. The first is  
4 that the project as a whole -- I mean the whole business  
5 of natural gas production and its transmission --  
6 will introduce a very large source of revenue in the  
7 private sector to the Northwest Territories for the  
8 first time in history, a source of revenue which will  
9 greatly exceed the operating cost of the governing  
10 -- all of the -- exceed all of the costs of the  
11 Northwest Territories. I think that will be important  
12 in itself because it will completely turn the situation  
13 around from one in which the rest of Canada has  
14 historically been a source of funds through the Federal  
15 Government, which have come into the Northwest  
16 Territories, into a situation in which the Northwest  
17 Territories will become a substantial net producer of  
18 revenues, many of which of course will simply go to  
19 reimburse the costs of operation, but which will  
20 greatly exceed those costs so that there will be  
21 substantial royalties paid, very substantial royalties  
22 paid, substantial income taxes paid by the companies  
23 because the operations' in the Territories, and there  
24 will be, I'm sure, significant profits to the government  
25 by the companies, of course which goes along with  
26 paying income tax.

27 I don't feel particularly  
28 qualified, you know, to consider all -- what all of  
29 the social and political and attitude effects of that  
30 will be, but I think that's important to bring out



S.R. Blair  
Cross-Exam by Bell

1 the tremendous changes that will occur of that story.

2 It seems to me the other  
3 main heading of socio-economic impact will be the  
4 matter of the construction of a pipeline, if one is  
5 built,  
6



1 as a major civil engineering  
2 construction project with its effects on the provision  
3 of transportation systems, communication systems  
4 to get the -- transportation systems to get the  
5 equipment and materials into the job, permanent  
6 communication systems to keep the line operating,  
7 a small number of operating personnel.

8 Pipelines aren't particularly  
9 impact types of projects. In their operation they  
10 are low labour intensive, they are buried, by their  
11 nature they are not really noticed -- they are probably  
12 the least noticeable of all civil engineering projects.

13 THE COMMISSIONER: Excuse me,  
14 Mr. Blair, you are saying that the pipeline once  
15 imbedded in the ground is something that so far  
16 as your experience in Alberta and the rest of Canada  
17 is concerned is not as noticeable as any other  
18 civil engineering project. It seems to me you have  
19 to separate the operation of the pipeline from the  
20 construction phase, and I am sure that you would  
21 agree with that. That brings me to something you  
22 said when you first began to answer this question,  
23 you said that the pipeline would introduce a great  
24 source of revenue to the private sector during  
25 the construction phase -- that seems to be obvious.  
26 During the operating phase, one can see, depends on  
27 governmental policy, but one can see royalties and  
28 so forth going to the public purse, did you mean  
29 that it would be a great source of revenue during  
30 the operating phase as well as during -- a great



S.R. Blair  
Cross-Exam by Bell

1 source of private revenue in the private sector  
2 during the operating phase as well as the construction  
3 phase?

4 A Yes, I did in the industry  
5 as a whole. I mean perhaps if I put -- if I guess at  
6 the figures it will maybe help to explain what I  
7 had in mind. I apologize for being so ignorant,  
8 I am a year or two out of date, but my impression  
9 is that the total royalty revenue of the Government  
10 of Canada for mineral production from the Northwest-  
11 Territories is perhaps something in the order of  
12 \$10 million or \$20 million a year and that the  
13 total expenditure through the Territorial Government  
14 is something in the order of perhaps \$100 million  
15 a year on an operating basis plus the capital projects  
16 and that has been basically then a net cash importing  
17 into the Northwest Territories to keep all the  
18 public works going of the difference. Whereas once  
19 you are looking at say, two billion cubic feet a day  
20 of natural gas production and let's guess a dollar  
21 an m.c.f., you are looking at total revenues in  
22 the first instance into the private sector of some  
23 \$700 million a year coming into the Northwest  
24 Territories and however the royalties and income  
25 taxes are cut, that's going to be assessed many  
26 hundreds of millions of dollars a year of royalty  
27 revenue to the Government of Canada from production  
28 from the Territories and completely change that  
29 balance around, and that's what I had in mind, and  
30 that the pipeline of course is simply a conduit



1 for marketing that commodity. I didn't mean that the  
2 pipeline makes all that much money for people,  
3 but it would be a necessary element in the production  
4 of that mineral and those revenues. That's what  
5 I had in mind.

6 MR. BELL:

7 Q Could you comment  
8 on the implications of a pipeline for a future  
9 development in the Northwest Territories?

10 A Yes, and perhaps I  
11 should just quickly complete the answer I had in  
12 mind to the last question, because I hadn't meant  
13 when I said that a gas pipeline is the least noticeable  
14 of civil engineering projects, I had meant to go  
15 on and say during the operating phase -- during the  
16 construction phase it is still a relatively less  
17 noticeable civil engineering project. If you  
18 conceive of -- let's say we are going to measure  
19 the projects in terms of the hundreds and millions of  
20 dollars of their cost you would notice a hundred  
21 million dollars of highway, of railroad, of canal,  
22 of airport, a heck of a lot more in construction  
23 as well as in operation and you'll notice a hundred  
24 million dollars worth of pipeline.

25 But I am not meaning here  
26 to go past the point that you put in eight spreads  
27 as we propose, eight construction spreads of  
28 four or five hundred people each for a two year --  
29 for a job that won't be completed for over two years  
30 after it started, that in itself is a significant  
and noticeable construction force and there will be a



1 socio-economic effect of that being done.

2 Now, can I go to your next  
3 question please, I am sorry, I just wanted to be  
4 sure I had said that.

5 Q Yes, future development.

6 A I don't know that it  
7 has -- well, let's consider the components. I think  
8 the existence of a pipeline will to a degree encourage  
9 the continuing exploration for natural gas and the  
10 drilling of development wells for natural gas and  
11 I think that the operation of the pipeline will  
12 add a measure of encouragement of development of  
13 other industries. I am not sure whether that measure  
14 is really significant. A very first thought, you  
15 know, when we first started talking up here about  
16 this in about 1970, there was sort of an impression  
17 there would be a lot of mines and maybe a pulp mill  
18 opened someplace and gas would be used to reduce  
19 ores and the more we have looked into it, the more  
20 skeptical we have become as to whether those thoughts  
21 are real, whether there will be very much industrial  
22 use of gas. So I just don't know what measure to  
23 put on it, but let's say there is an element I suppose  
24 of the availability of a large amount of a good  
25 fuel that may encourage some other development.  
26 I don't know -- well, those are the points it seemed  
27 to me to emphasize.

28 THE COMMISSIONER: Well,  
29 that the principal economic development that will  
30 follow the building of a gas pipeline, you say will



1 be the search for more gas and oil. Is that about what  
2 it comes down to?

3 A Yes, it is. I am  
4 thinking for instance if we look at northern Alberta,  
5 say the north half of the province of Alberta,  
6 of course, most of the populations of the south have,  
7 so you are talking of a big area, relatively sparsely  
8 populated and then think of where the gas pipeline  
9 is now and has been for, say, five years, and what it  
10 is like there. It is pretty hard really to say  
11 -- to point today to much development that you could  
12 attribute to that pipeline. We're usually on the  
13 other side of this argument, trying to think of  
14 something good to point about the existence of the  
15 pipeline, but there's not very much. You might get  
16 a little commerce that use the gas sometimes,  
17 but most of the development of other industries  
18 would proceed with or without a gas pipeline if  
19 they were to proceed at all, I mean the pulp mills,  
20 the mines rarely have anything to do with whether  
21 or not there is a gas pipeline.

22 THE COMMISSIONER: Well, is it, you  
23 know, having cavilled it, Mr. Bell, for raising  
24 this -- I find it quite interesting, but the principal  
25 industrial users then, of gas, are likely to be  
26 within the big cities, is that the experience in  
27 Alberta?

28 A Yes. The petrochemical  
29 plants have historically tended to be at the  
30 downstream end of gas or oil pipelines, though we're



1 having a big battle now with some success to get  
2 them into Alberta. We're trying to get them out of  
3 Sarnia, the new ones, into Alberta and making some  
4 progress with it. The thermal power plants tend  
5 also to be at the centres of population. The  
6 smelters can be either place. There is a lot of  
7 gas consumed in Ontario around Hamilton by the  
8 big steel companies down near the markets. Of  
9 course some gas is used for refining ores closer  
10 to the ore body. But I think those are refining  
11 operations which would go ahead without gas,  
12 anyhow.

13 It's hard to think of sub-  
14 stantial industries that are located in the  
15 country -- I mean in rural or sparsely settled  
16 areas and which are there because there is gas.  
17 I find it hard to think of any.

18 THE COMMISSIONER: Well,  
19 thank you.

20 A And the area along  
21 the gas pipeline is not noticeably any more  
22 developed in our experience than the equivalent  
23 country where there happens to be no gas pipeline.  
24 I don't think there is very much correlation.



S.R. Blair  
Cross-Exam by Bell

MR. BELL.

Q I believe Mr. Horte also said, and I see him here so he can correct me if I'm wrong, that in terms of the long-term stability of the regional economy, the pipeline would have favorable implications. Would you care to comment on that?

A Yes, I think they are favorable, they are not all that big. Our own systems in Alberta are in many municipal districts, the largest single taxpayer. We pay -- I mean for property taxes, for compressor stations and for the pipe itself we pay three and four, \$5 million a year in each of a number of municipal districts in the province, and happen to be the largest -- no, I'm sorry, wait a minute. A decimal place off three or four thousand dollars a year in each municipal district, and at that are the largest single taxpayer. So that's an element and it's every year, forever.

I think the availability of gas from the pipeline to the local communities at least provides a competitive base of fuel supply that other fuels have to meet. I suppose that could be described as a stabilizing influence. So I think the factors are favorable, but relatively small, unless that municipal tax revenue is important, which it is in some instances.

Q And that element would be directly related to the length of time which the pipeline was in operation, of course.

A Yes, but when you put in



S.R. Blair  
Cross-Exam by Bell

1 the word "only", you kind of prompt me to say -- I  
2 wouldn't say "only" because I don't know when that  
3 ever stops. I mean it's a long, long time. It's many,  
4 many decades of operation that we anticipate. Many  
5 tens of years, I think.

6 Q Well, would you care to  
7 comment on the likely social impact of a pipeline in the  
8 Northwest Territories?

9 A In the construction or  
10 the operating phase?

11 Q Well, both.

12 A Yes. Mr. Burrell and his  
13 colleagues as later witnesses will be better equipped  
14 to do this because they concentrate a greater part of  
15 their time on it than I do. So I'll try to summarize  
16 briefly.

17 Well, it will be the social  
18 impact of the positive one of providing revenue to  
19 local people and businesses in the construction phase,  
20 and the operating phase. There will be the social  
21 impact which we hope to be well-confined, but there  
22 will be some social impact in some areas to the  
23 proximity of a construction camp in the construction  
24 phase. In the operating phase the social impacts,  
25 I think, will be very slight because there are relatively  
26 few people and I think the effects are positive, I  
27 mean there are some good operating jobs and in some  
28 communities where there is little else, I think the  
29 existence of a successful company is a positive feature.  
30 But I'd say in my view the social impact will be



S.R. Blair  
Cross- Exam by Bell

1 relatively slight. I don't mean -- I know I have  
2 said other things here about revenues to the Northwest  
3 Territories, I'm not taking away from any of those,  
4 I'm just --

5 Q Yes, I understand.

6 A -- adding this on top  
7 of what I've said before.

8 Q Can you envisage any  
9 detrimental or negative social impacts?

10 A Yes. Prospectively many,  
11 but those are the ones which we intend to either  
12 avoid or minimize. I know there is a potential for  
13 a lot of problems unless there is real restraint and  
14 constraint applied.

15 Q Well, perhaps I could move  
16 onto another question then. You said in your testi-  
17 mony during cross-examination by Mr. Anthony today that  
18 on the subject of moving Alaska gas that you would be  
19 prepared to consider doing so if the Canadian officials  
20 expressed a desire, or requested you to do so. But  
21 that you had not received any such communication from  
22 the Canadian Government or any official body. Is that  
23 what I understand to be correct?

24 A Well, let me say it  
25 rather in my own way. In the direct testimony -- well,  
26 I won't take the time of re-read/<sup>ing</sup> the direct testimony  
27 but I refer you to the direct testimony and say this,  
28 that we have said that we do not want to do that job.  
29 We don't seek it, we don't apply for it, we don't want  
30 it. If we were asked to do it, we wouldn't want to



S.R. Blair  
Cross-Exam by Bell

1 move all the Alaskan gas anyway. We are negative  
2 about moving all the Alaskan gas because we think that  
3 that's, as we said in the direct testimony, produces  
4 more problems and hazards than it does any business  
5 advantage of getting a little bit more transmission  
6 business. But then we said that if through somebody  
7 else's initiative, we have no plan or proposal or  
8 intention to do this, to move that Alaskan gas, but if  
9 there's somebody else's initiative we did find ourselves  
10 asked, instructed to provide such a service, that the  
11 question has been raised by others so we'll respond  
12 to it that we are not so nationalistic that on principle  
13 we would refuse. We're not against doing business  
14 with United States companies that was really our  
15 point, but we do not seek the business of moving  
16 Alaska gas.

17  
18 I was a bit kind of literal  
19 in answering just one of Mr. Anthony's questions. He  
20 said, "Would you call it a real possibility or a  
21 remote possibility?"

22 And I thought about it for  
23 a moment and consented to the word "real" because a  
24 lot of other people have been talking about it, but I  
25 didn't mean by that to give any impression that we  
26 anticipate it or seek or intend to provide such services.  
27 We do not.

28 Q So I take it then you have  
29 not received any such requests from any appropriate  
30 party?



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Cross-Exam by Bell

1 A You are correct.

2 Q Have you engaged in any  
3 discussions with any appropriate party preliminary to  
4 such a request?

5 A No, not -- no, Foothills  
6 has not.

7 Q You said that you would  
8 not be willing to move all Alaskan gas. You might be  
9 willing to move some Alaskan gas. If you did move  
10 some Alaskan gas, how would you envisage the rest of  
11 it getting to the United States?

12 A Well, we wouldn't care.  
13 I mean it wouldn't be our business. Others have raised,  
14 other parties of course <sup>have</sup> got in their application one  
15 plan to move it across Alaska and then move it to  
16 United States as liquified natural gas in tankers;  
17 other parties have suggested that they could come into  
18 the continental Unites States by pipeline down through  
19 Fairbanks along the Alaska Highway; so I'm aware of  
20 those suggestions. What our point is it's a very big  
21 responsibility, it's going to take a tremendous amount  
22 of capital, and that there are just other things that  
23 we would like to feel free to do in these years, and  
24 we do not seek that responsibility. We do not seek  
25 the responsibility of moving all of the gas. We would  
26 sooner not do it.

27 Q Well, you could then see  
28 an American pipeline company moving gas overland  
29 through Canada to the United States then?

30 A Yes. It's a



possibility that's been raised by others and would be one on the list.

There's still another -- just to be complete in what I was saying to you, when I say we don't want to move all of it, that's on the basis that there would be two or three billion cubic feet a day to be exported from Alaska. One of the other possibilities that's been raised is that Alaska is likely to use a lot of it there, so that the quantity to go into the continental or the lower 48 states would be much less, and if it were much less, then again it might be manageable for a project of this kind, of our kind to perform. But this is all completely -- I'm just sort of thinking through all the if's. We don't seek it; we're not trying to do the job; we're not asking for it; we have no intentions to do it.

Q The next matter, and I think it's the final one, that I would like to move to is a concern which has been expressed to me by the chief and Band Council from Fort Simpson, and they would be interested to know if you have any policy on the desirability of a highway to connect Fort Nelson, B.C. with the Mackenzie Highway system in the Northwest Territories. I believe this is popularly referred to as a "Fort Nelson Highway."



1 A I have no policy or  
2 point. Howard Hushion John Burrell are on their  
3 way there tonight and would be very able to discuss  
4 that matter with the council at the council's  
5 convenience. I have no policy myself.

6 MR. BELL: Fine, thank you,  
7 I have no further questions.

8 CROSS-EXAMINATION BY MS. LANE:

9 Q I have several questions  
10 to ask you, but they have already been touched in  
11 some way or another by other participants and I  
12 am going to attempt to direct you as quickly as  
13 possible to the areas that I am particularly interested  
14 in.

15 The first matter that I wanted  
16 to discuss with you, comes out of the discussion or  
17 at least leads from the discussion that you just had  
18 with Mr. Bell concerning socio-economic input and  
19 capsule commented it for my purposes as advanced  
20 consultation with communities.

21 Now, you have outlined the  
22 procedure that your company used for gathering the  
23 socio-economic input and I think that I am correct  
24 in saying that you thought you couldn't put any kind  
25 of a percentage on the amount of weight that you  
26 gave it in deciding on route selection. But regardless  
27 of what weight you did give it, or what procedure  
28 you used to gather it. At the time that you made  
29 your route selection were you entirely satisfied  
30 that you had received an adequate cross-section of the



1 community opinion in any of the communities that  
2 you visited.

3 A No, I would not feel  
4 entirely satisfied that that had occurred. As I  
5 say the visit program that we conducted in the  
6 '70's ended when the groups were merged. Then we  
7 moved quickly to put together an application in  
8 the last --last year, and another factor has been  
9 that in some communities, the band councils or  
10 settlement councils have declined us any opportunity  
11 for conferences recently because they were concerned  
12 that to discuss line location or pipeline planning  
13 would in some way prejudice their position as nego-  
14 tiators with respect to lands entitlement, so  
15 we have -- there have been some cases in which we  
16 have been simply declined any interview in the  
17 last year, so those are the reasons that I say  
18 that I don't feel entirely satisfied.

19 Q In recent weeks at  
20 least one community had indicated to you that your  
21 advance consultations were not adequate and you  
22 made a very sensitive move and surprisingly drastic  
23 move on route selection. I am wondering if you  
24 are considering returning to any other communities  
25 in hopes of reinforcing your picture of what the  
26 communities feel about the choice of route selection.

27 A Yes, definitely. Were  
28 you thinking of Good Hope?

29 Q I was, but I am not  
30 as concerned about Good Hope as much as it indicated to



1 me that perhaps you had realized that your method  
2 of -- either your method or the community reluctance  
3 in the beginning had given you an inadequate picture  
4 of community feeling. Whether or not that's  
5 caused you to make new plans to revisit communities,  
6 to reinforce your picture.

7 A Well, the answer is yes.  
8 Actually Good Hope was one of those which had --  
9 in which the Band Council had refused to discuss  
10 location with us when we had attempted to raise  
11 the matter with them in previous weeks and months,  
12 and there are others. But the main answer to you  
13 is yes, we are going back into the communities  
14 and John Ellwood and John Burrell have people  
15 with them, Howie Hushion, at every opportunity.

16 Q Will you be discussing  
17 with communities, particularly around the Delta,  
18 the possibility that you may at some time in  
19 the future move westward across either the north  
20 slope or an interior route towards the Alaska  
21 border?

22 A I wouldn't even  
23 bother with them with it, with that thought at  
24 this stage because, you know, as you come up here  
25 when you're asked a question, you answer it and  
26 then sometimes these hypothetical questions then  
27 later almost sound as though we had a plan, but  
28 we have no reason at this stage to raise that matter.

29 Q I understood you  
30 earlier, you said that it wasn't a hypothetical



1 question, that it was a real possibility. And  
2 it seemed to me that to get an adequate picture of  
3 community feeling as early as possible is the  
4 best way to avoid having to change your mind  
5 after you have already set your routes.

6 A You're right. I  
7 stumbled by calling them hypothetical questions,  
8 because I agreed that that one was more than hypotheti-  
9 cal, but I do think that -- well, yes, we could, we  
10 could raise the matter, but I would want to emphasize  
11 -- I would want it to be emphasized on our behalf at  
12 the time that unlike the application or unlike a  
13 delivery line to a community, that that is something  
14 discussed only as a possible later development and  
15 one which we weren't proposing, I mean the line  
16 from Alaska.

17 THE COMMISSIONER: I think  
18 that Miss Lane represents the Native Inuit people  
19 of the Mackenzie Delta and I think she was interested  
20 as I was in the remarks you made about a line  
21 from Banks Island and Victoria Island because  
22 that has some bearing on the communities of Sachs  
23 Harbour, Holman Island and Paulatuk, and I won't  
24 say anything further, but I know that Miss Lane  
25 is probably coming to those, but I thought you put  
26 those in a slightly different category from the  
27 possibility of Alaskan.

28 A Yes.

29 MS. LANE:

30 Q Those are even more real



S.R. Blair  
Cross-Exam by Lane

1 possibilities.

2 A Yes, in -my mind they  
3 are, but there has been no gas discovered on either  
4 island so far so I am out on quite a limb in considering  
5 -- in describing them as possibilities, but I think  
6 that that is a possible development.

7 THE COMMISSIONER: What  
8 island did you say?

9 A Banks and Victoria.

10 THE COMMISSIONER: Excuse me,  
11 what about Elf. They were exploring on Banks for quite  
12 awhile as I understand it. Did they -- if it's  
13 not impolite to ask, does anybody know if they  
14 found anything -- oil, or --?

15 A No, they haven't  
16 found anything at all. There has been no gas  
17 or oil discovery on either island so far.

18 THE COMMISSIONER: I see.

19 A But there has been  
20 a lot of seismic and other exploration analysis.

21 MS. LANE:

22 Q The second matter that  
23 I want to talk to you about is the delivery of  
24 gas to communities in the Northwest Territories.  
25 Now, I understand that this is a major difference that  
26 you are putting forward between yourselves and  
27 Arctic Gas and I am attempting at this point to  
28 find out exactly what it means. When I read the  
29 answer to your question 41A on page 31, what I  
30



S.R. Blair  
Cross-Exam by Lane

1 want to ask you as a result of reading that question  
2 as it implies that you put yourself into a position  
3 of committing yourself to deliver some gas to commun-  
4 ities in the Northwest Territories because you feel  
5 it is in the public interest and it would be a good  
6 thing to do regardless of its efficiency economically.  
7 and that you are putting yourself in the position  
8 of making sure that there is some available.

9 Now, what I am concerned  
10 with is how much is available. At this point, is  
11 it going to be a struggle to find someone -- is  
12 it going to be a struggle to find enough gas to  
13 deliver to the communities?

14 A No, no problem. If  
15 the pipeline is certified there would be no problem  
16 at all on sufficiency of gas supply to those  
17 communities.

18 Q If by some -- at some  
19 time in the future near or far you managed to  
20 persuade industry that's based on petrochemical or  
21 which uses gas as a major part of their industry,  
22 if you persuaded them out of Alberta and into  
23 the Northwest Territories, would there still be  
24 enough gas to deliver to the communities or is most  
25 of it committed to southern markets and other  
26 commitments?

27 A If that happened,  
28 which I don't think likely, but if it happened,  
29 there would still be lots of gas to the communities  
30 and can I give you just a figure or two for perspective.



S.R. Blair  
Cross-Exam by Lane

1 By my recollection after several years of growth,  
2 perhaps five or ten years of growth of population  
3 in the communities, we would estimate that the  
4 gas load -- I was given this figure and I don't have  
5 it right with me -- I am not far off in saying that  
6 it would be something like 15, one five, 15 million  
7 cubic feet a day, which would represent, if that  
8 figure is right, something like about 1% of the  
9 throughput of the main line and traditionally and  
10 I think it would occur here too, that is recognized as  
11 a very high priority commitment and obligation.  
12 I can't conceive of ever shutting off a local consumer  
13 in favour of a new industry or something downstream.  
14 In my view it would be the highest priority of  
15 all of supply. So if you are saying the one percent  
16 of your throughput has the highest priority it means  
17 it is absolutely secure in terms of supply availability  
18 no matter what else happens.

19 Q There is a third area  
20 that I want to ask you about, work programs  
21 for northerners? Now, you mentioned this in your  
22 direct evidence and you mentioned it in a very  
23 cursory way, but I wondered if -- I have taken the  
24 opportunity of reading your application information  
25 -- and I would like to take the opportunity to restruc-  
26 ture what I think you have said in your application,  
27 and basically what I think you have said is that  
28 you presently have -- or you began with 16 people  
29 who<sup>you</sup> were training in supervisory positions and --  
30

A In 1970.



1 Q And you have at the moment  
2 26, but mostly since the advent of Nortran you have  
3 been allowing them to do the bulk of training  
4 of northerners in petroleum positions.

5 A No.

6 Q Is that not correct?

7 A No. Those 26 are  
8 employees of the Alberta Gas Trunk Line Company.  
9 They work for us and we do the training.

10 Q Yes.

11 A What we have done is agreed  
12 with some other some other companies that the  
13 overall administration of the training program on a  
14 sort of administrative or office basis will be  
15 co-ordinated through Nortran but these guys  
16 have our company, Alberta Gas Trunk Line hats on and  
17 they are working on our property and under our  
18 own direct supervision.

19

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S.R. Blair  
Cross-Exam by Lane

1 Q But the point of hiring  
2 them and training them in the first place, I understood  
3 you to say, is that they would eventually take their  
4 place in the Maple Leaf system of pipeline construction  
5 if you were to be granted a right-of-way and build your  
6 pipeline. Is that not correct?

7 A Yes, it is substantially  
8 correct. I might just elaborate a little, by saying  
9 it wasn't just in construction of the pipeline. We  
10 conceived them as inspectors during the construction  
11 phase and operating people and operating supervisors  
12 in the operations phase. Those two things go together  
13 well anyway, its a good thing to take your future  
14 operating people and put them out on the job as  
15 inspectors because they know whatever is built is what  
16 they've got to live with, for the next period in their  
17 working lives, and the other thing I wanted to elaborate  
18 is we didn't hire them only for that purpose. We said  
19 to them, "Look, we're not quite sure when this thing  
20 will be built." In those years we thought it would  
21 be sooner than it's turned out to be, but we're not  
22 sure. "Come to Alberta. Work in the company. We'll  
23 give you continuous employment and we will not make it  
24 a condition that you only work for us until <sup>there is</sup> a certificate.  
25 Then you can either stay with the company, if you want  
26 to but what we hope you will want to do is go back  
27 into the north."

28 Q Well, let's assume that  
29 you do build a pipeline and that they do choose to go  
30 back to the north. There's only 26 of them at the moment.



S.R. Blair  
Cross-Exam by Lane

1 That's not a lot of people for this kind of job. I  
2 presume that you can understand that northerners will  
3 not be interested in only doing pick and shovel jobs,  
4 but will want these kind of jobs on a larger scale  
5 than perhaps 26. Now, when I read your application  
6 I understood you to say that after, if you're granted  
7 the right-of-way that you'll go into training on a  
8 larger scale. You'd firstly on your own basis train  
9 supervisory personnel, but also that you had made  
10 arrangements with contractors or intended to make  
11 arrangements with contractors that they would train  
12 people in construction skills <sup>that</sup> they may not already have.  
13 Is that an accurate summary of what you say in your  
14 application?

15 A Yes, I think so. I'd  
16 like to go back to your 26, though, and say this, that  
17 they not be a lot, that's not a large number of  
18 people in some ways, but it's a lot in others. If you  
19 had eight spreads, construction spreads working, that  
20 would for instance give you the clearing, grading and  
21 cleanup inspector on each spread out of the 26, if  
22 that was the right way to deploy them, and then looking  
23 forward to the operating period it's not that big an  
24 organization anyway. I mean 26 would be a heck of a  
25 good start on the operating roster for Foothills Pipe-  
26 lines in the Northwest Territories, if they all came  
27 back up.

28 Q Can you give me an  
29 idea of the numbers that would be involved, first of  
30 all in the supervisory capacity, once you get under



S.R. Blair  
Cross-Exam by Lane

1 way after you've started to build your pipeline, and  
2 also the numbers that are going to be involved in the  
3 construction classes that are going to go on afterwards?

4 A I'll give you my own  
5 best memory or guess. In the construction phase,  
6 the owner would have perhaps 50 people out on the job  
7 as the owner's representatives, plus some more in  
8 Yellowknife and some other settlements on design and  
9 administrative work, maybe something like 100 people  
10 in the Territories, all of whom really would be  
11 supervisory in the sense they would be inspectors or  
12 technical people, there wouldn't be any pick and shovel  
13 people among them because the owner doesn't need them.  
14 That comes through the contracting organization.

15 Then in the operating phase  
16 -- again others will give you better figures --but I  
17 suppose there might be 20 supervisory, real, you know,  
18 / senior  
supervisory appointees in the Northwest Territories.

19 Then the other part of your  
20 question, I guess, was during construction, there  
21 are several thousand workers in total, and I believe  
22 far more workers than you would have recruits from the  
23 north, so that I think what will establish the number  
24 of jobs for northerners will be the number of people  
25 who want to train for the pipeline. I'd say all the  
26 people in the north who want to train to work on the  
27 pipeline would get that kind of training and employ-  
28 ment, in my judgment.

29 Q What I'm really trying  
30 to get at, I guess, is that particularly with the last



S.R. Blair  
Cross-Exam by Lane

1 part of my question is while it is a worthy motive,  
2 you are going to have these construction classes where  
3 they are given the training, once you've been granted  
4 a right-of-way, if you're granted a right-of-way, are  
5 you really going to have the time to train these people  
6 before it's all over? Before there's no work left to  
7 be done.

8 A Oh yes, that being our  
9 commitment, we will make the time, we will take it.

10 Q In other words, you'll  
11 wait until you've got enough people who want to be  
12 trained, trained before you build, or --

13 A I don't think it will work  
14 that way because I think we'd be taking time for other  
15 reasons. I think that after the certificate is awarded  
16 that the process of getting financing of the final  
17 establishment of lands or easement provision, the  
18 logistics of starting the material in toward the job,  
19 getting pipe rolling, we hope there will be a new  
20 industry established that will make valves and other  
21 equipment in Canada, I think those kinds of time  
22 requirements will define the time that the job starts  
23 and leave enough time for training.

24 Q Now, for people who may  
25 have latent skills that are appropriate to construction,  
26 but don't have the kind of certificates that unions  
27 recognize, are you making any arrangement with the  
28 unions to recognize the non-standard skills, the non-  
29 certified skills but the adequate skills that --will be  
30 necessary

A What kind of skills are



S.R. Blair  
Cross-Exam by Lane

1     you thinking of?

2                                 Q     Well, I understand that  
3     people who do construction jobs in the south, particul-  
4     arly, are certified to certain kinds of jobs. I also  
5     understand there are some people in the north who have  
6     acquired these skills without the certificates to say  
7     they can do them. In Yellowknife you often see  
8     advertisements in the newspaper saying that:

9                 "Northerners without formal requirements who  
10                feel they can do the job can go ahead and apply."  
11     Are you going to make that kind of arrangement with the  
12     unions to accept that kind of person, personnel for  
13     working on your jobs?

14                               A     I don't think we'll have  
15     to because that business of certifying tradesmen is much  
16     more applicable to the processing kind of industry, to  
17     that kind of construction than to pipeline jobs where  
18     we don't have a lot of that on pipeline jobs and there  
19     is all kinds of need on pipeline jobs for people who  
20     can drive trucks, operate crawler tractors, people with  
21     some mechanical skill, have some proficiency in operating  
22     equipment. Now, it's true that the operating jobs,  
23     welder jobs are within unions. But I don't believe  
24     that there will be any practical barriers to employment  
25     of northerners for reasons of certification. I believe  
26     that the unions will take them into membership for those  
27     occupations which                         are organized by the  
28     union.

29                               Q     The last matter I want to  
30     talk to you about was partially covered this morning



S.R. Blair  
Cross-Exam by Lane

1 by Mr. Templeton when he discussed guns and liquor.  
2 This is a matter that Mr. Scott dealt with with Mr.  
3 Horte on Monday, and perhaps you were here. There is  
4 some concern that the construction of the pipeline,  
5 construction camps, the kinds of people who come to  
6 construction camps because of high wages, cause social  
7 problems in communities as well as draw many people  
8 away from the traditional roles they have played in  
9 the economic structure of the community, and Mr. Horte,  
10 I believe, indicated that Arctic Gas wasn't taking  
11 any particular role in seeing that wages were kept down,  
12 and I just wondered if you would like to comment on  
13 the same categories? Are you going to make any limita-  
14 tion on overtime, on the scale of wages, how do you  
15 see your role in that area?

16 A Like a lot of the answers  
17 I've given you, there will be other people coming who  
18 will have thought about them, as our witnesses, who  
19 will have thought about the matter much more and  
20 have the data much more at hand.

21 Q Well, I'm talking basically  
22 about company policies.

23 A Yes, but I'm trying to  
24 think if there's anything that I can say. Well, it's  
25 our policy to do a job as economically as possible.  
26 But it is not our policy to try to get the wages at  
27 any particular level. Certainly not in my thinking  
28 would we try to hold wages down lest the availability  
29 of that employment had some negative effect on communi-  
30 ties. I think that would be leveraging things in the



S.R. Blair  
Cross-Exam by Lane

1 wrong direction. I think there must be some other ways  
2 of softening the impact on a community than that.

3 Q What would you suggest?

4 A Well, again there are  
5 people who have thought about it more. What occurs  
6 to me at the moment is to -- well, first as far as the  
7 construction people going into the communities, I think  
8 that can be restricted where the community wishes, and  
9 I think a community can be put out of bounds, if they  
10 wish, to construction forces, if the community wishes.  
11 Then the other effect of the availability of employment  
12 drawing people out of the community that other people  
13 in the community might think would be better for every-  
14 body if they stayed there, I'm afraid I don't see  
15 anything -- I see the human rights issue of allowing  
16 people to do what they want to do as more important  
17 than their elders or other people's idea of maintaining  
18 the solidarity of community life, and I don't have  
19 any particular suggestion on that.

20 Q That's the only  
21 questions. Oh, I'm sorry.

22 A Excuse me.  
23 A little indirectly on that, I have this suggestion,  
24 that John Burrell and others will explain this to  
25 you fully, that we may and what we will endeavor to  
26 design employment of a sort which is particularly  
27 compatible with continuing the life in the community,  
28 so that whether it's contract clearing or seasonal  
29 work or temporary work, so that people don't have to  
30 leave the community life to get some of the money off



S.R. Blair  
Cross-Exam by Lane

1 the pipeline employment, and that's a positive thing  
2 we can do. But I don't anticipate our saying that  
3 we will not hire somebody from a particular community  
4 because the elders in the community feel that they don't  
5 want their young people leaving for work, I don't think  
6 we would do that.

7 MISS LANE: Those are the  
8 only questions that I have to ask you, however I be-  
9 lieve we'll be taking advantage of the Blair bag after  
10 we've heard the rest of the panel.

11 THE COMMISSIONER: Thank you,  
12 Miss Lane.

13 You're the only one left, I  
14 think, Mr. Scott. Well, we'll have our coffee break  
15 now then.

16 (PROCEEDINGS ADJOURNED FOR FEW MINUTES)  
17  
18  
19  
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21  
22  
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S.R. Blair  
Cross-Exam by Scott

1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

2 CROSS-EXAMINATION BY MR. SCOTT:

3 Q I was going to say, Mr.  
4 Blair, that I was reluctant to intervene in the  
5 flag debate that raged yesterday between you and  
6 Mr. Goldie but in the little hiatus my reluctance  
7 has disappeared.

8 Let me see if I understand  
9 where we are in this issue. Am I correct that  
10 you have rejected Mr. Goldie's rather rude  
11 suggestion that you left the consortium and  
12 went on your own because you wanted to own the pipeline  
13 that went through Alberta.

14 A Yes, you are correct.

15 Q And I take it therefore  
16 that the main theme of your evidence is that you  
17 left the consortium and went on your own for the  
18 reason that you have advanced and that is the  
19 consortium was "foreign led and controlled with  
20 consequent repercussions for this country?

21 A Yes, generally, that  
22 is correct. The particular reasons were more  
23 specific, but there were reasons that we gave in  
24 particular but which considerably derived from in  
25 our view the nature of the ownership and control  
26 of the consortium.

27 Q The ownership  
28 and control I take it would have been the dominant  
29 or controlling motivation reflected perhaps in one  
30 or two precise problems that confronted the consortium



1 at that time?

2 A Yes, I think that is  
3 correct to put it that way.

4 Q Well, now I take it  
5 that you would agree with me that merely because  
6 American and Canadian persons or enterprises agree  
7 on a project, that that does not by itself imply  
8 any foreign conception or domination.

9 A I agree with you.

10 Q Indeed, it is conceivable  
11 that such a project, and I am not speaking particular  
12 cases, it is conceivable that such a project may  
13 be in the joint and equal interests of both nations?

14 A Yes.

15 Q Well, now turning to  
16 this particular case I want to ask you just for  
17 the moment to leave aside the shareholdings and  
18 the directorships and the names of the officers and  
19 to leave aside the question of where the pipe  
20 will be purchased, we'll come to them in just a  
21 moment. I take it that you would be satisfied if  
22 the arrangement proposed met two characteristics.  
23 First, it assured that all the Delta gas would go  
24 to Canadians when Canadians required it and in  
25 the second place it assured that there would be  
26 no additional cost to Canadians by virtue of the  
27 fact that the line also carried foreign gas.

28 A No, I would want  
29 other factors to be reflected in the project.

30 Q What other factors would



S.R. Blair  
Cross-Exam by Scott

1 you want in addition to those two before you were  
2 satisfied?

3 A I would want it to  
4 be a project which was sensitive and attentive  
5 to the policies and attitudes of the provincial  
6 governments in western Canada and the territorial --  
7 the Government of the Northwest Territories, because  
8 as a practical matter I believe that even though  
9 a project may be federal in its regulatory standing  
10 and in the incorporation of the company, that it is  
11 necessary for a main -- for any main project to  
12 have that relationship to the provinces through  
13 which it is built. I think that is a very important  
14 matter.

15 I'd want the project to be  
16 clearly manageable.

17 Q Are you moving on to  
18 the next one?

19 A Yes.

20 Q Can I just deal  
21 with that one for a moment and could I summarize  
22 that by saying that you would want any project as  
23 a third characteristic to meet all reasonable and  
24 proper demands of the provincial or territorial  
25 governments through which it passed?

26 A No, I was going a  
27 little bit further than meeting demands. I was  
28 talking of sensitivity and attention. I want it  
29 to be a project which encouraged the support of  
30 the provincial and territorial governments and in



1 this instance there existed in Arctic Gas's project  
2 one which at that time had the express opposition  
3 of the Government of Saskatchewan and had an  
4 element of opposition from the Government of British  
5 Columbia.

6 Q Yes.

7 A And I just felt it --  
8 my colleagues and I felt that that was one of the  
9 reasons that we wanted to --that we thought that  
10 the project could be much better approached by  
11 western Canadian companies because we think the  
12 problem is if you try to satisfy -- the more that  
13 you concentrate on satisfying everybody in twenty  
14 odd companies and about a similar number of states  
15 and federal and Provincial jurisdictions, the  
16 less chance you have of really satisfying anybody  
17 and we felt that that was an important point that  
18 required a better approach than we saw being taken  
19 by the Arctic Gas consortium.

20 Q But I take it that  
21 the rider that you would attach to that is that  
22 you are not going to be blackmailed by any provincial  
23 or territorial government, you will have to gauge  
24 in each case the reasonableness of their demand,  
25 if it be that, or exasperation or its opposition.

26 A Oh, yes, of  
27 course, that is so. I wouldn't want to raise the question  
28 of blackmail. I am not thinking in those terms. I  
29 am thinking of terms of getting to them and working  
30 things out.



S.R. Blair  
Cross-Exam by Scott

1 Q All right, now -- you  
2 were going on to an additional requirement which  
3 you would want to see to be satisfied.

4 A Yes, an additional  
5 one is that the project be truly manageable in  
6 terms of the construction equipment and crews that  
7 will be needed. You said that you would like me  
8 to leave a side pipe and so I will in terms of  
9 all equipment that will be needed, in terms of  
10 financing, and in terms of scale and as it might  
11 effect the economy of the country, of the provinces  
12 in which it would be located and in all respects  
13 a truly manageable project. I think that is a  
14 very important additional condition.

15 Q And do I draw from that  
16 that in this particular case and in the circumstances  
17 that obtained at the time, you concluded that the  
18 scale of the consortium's application were too  
19 large?

20 A Yes, and that it  
21 was -- in some cases unnecessarily large, even  
22 for a joint effort for the two countries.

23 Q Anything else?

24 A Yes. I am hesitating  
25 to give you too much detail in this and try to  
26 concentrate on ly on the main elements. I would  
27 want it to be a project which was cautious and  
28 prudent in its selection of pipe and I am not  
29 talking about origin of pipe here, so I am not  
30 forgetting the exclusion that you have asked me to



S.R. Blair  
Cross-Exam by Scott

1 observe, but I'd want it to be a project which would  
2 proceed with all materials of which pipe is by  
3 far the most important in a pipeline project  
4 with which we had some familiarity, some experience  
5 of installation, so that the, perhaps, if I might  
6 expand this a little to give you the more general  
7 purpose here would be that the areas of uncertainty --  
8 the subjects of uncertainty be confined only to those  
9 which had to be faced as a matter of necessity, and  
10 since we are talking of a project which involves  
11 coming on much further into the north than pipelines  
12 have gone before in North America, into permafrost  
13 and other conditions which have some novelty, that  
14 we use our tried and true practices as much, and  
15 equipment as much as possible and not experiment  
16 with novel equipment or materials when unnecessary.



S.R. Blair  
Cross-Exam by Scott

1 Should I go onto the next one?

2 Q Yes, please.

3 A As I think a separable  
4 point from the first that I gave you, a point about  
5 sensitivity and attentiveness to the aspirations of  
6 Provincial and Territorial Governments, I'd add another  
7 of sensitivity to and attentiveness to local populations  
8 along the route of the system, and I have in mind the  
9 sort of thing that we have done in -- hopefully as a  
10 step in that direction, by making an integral part of  
11 the project the delivery of gas to the main settlements  
12 in the Northwest Territories. I hate to forego an  
13 opportunity to list all the good qualities we'd like  
14 to see in a project, obviously there are --

15 Q I asked you only in  
16 general terms.

17 A I think those are the  
18 main headings that occur to me.

19 Q Well, let me put it to  
20 you that if a project, whosever it be, met all those  
21 requirements including the two primary requirements  
22 as I see them, that I put forward at the beginning,  
23 I take it that you would not be unduly concerned about  
24 the ownership of the project per se.

25 A Well, we're still con-  
26 cerned about it in terms of -- I forget now just what  
27 else you asked me to exclude. There's a matter of  
28 nationality of ownership, which is a concern to us.

29 Q All right.

30 A And so I want to be sure



S.R. Blair  
Cross-Exam by Scott

1 that's included, and we have the other concern, which may  
2 be tied to ownership of the project that is not to  
3 unnecessarily duplicate or bypass existing operations  
4 which is doing a good job in their regions.

5 Q Well, let me put this to  
6 you then, that if a project met all of the requirements  
7 that you have outlined, and the two that I outlined,  
8 but in your judgment was controlled -- that is the  
9 ownership was controlled by Americans, do I under-  
10 stand that you would not be associated with that project?

11 A Well, what you should  
12 understand is if it were our business and in an area  
13 that we operate, as a matter of principle I would be  
14 opposing the project on that basis because I believe  
15 that there is far too much in Canada that already is  
16 owned and controlled by United States interests, and  
17 that the last thing we need is any more of it.

18 Q Well, let me put this  
19 proposition to you. If, and I emphasize "if", because  
20 obviously you don't agree, but if Arctic Gas met all  
21 the requirements that you and I have listed, I take it  
22 that you would now find its project objectionable on  
23 the grounds that you have given, of its ownership and  
24 control.

25 A Yes.

26 Q Well now, you've heard  
27 Mr. Horte describe a veto system which he asserts permits  
28 the Canadian non-producing companies to veto the  
29 views of others. I don't ask you to comment on that.  
30 I take it that as far as Foothills is concerned, in



S.R. Blair  
Cross-Exam by Scott

1 fact Westcoast and Alberta Trunk are equal partners  
2 because of the voting arrangement to which Alberta Trunk  
3 has submitted.

4 A Yes.

5 Q And it can be said, there-  
6 fore, that Alberta Trunk in that arrangement has a veto  
7 over the views of Westcoast, and vice versa.

8 A The word doesn't occur  
9 between us.

10 Q Friendly at the moment,  
11 but I take it that Westcoast cannot act under the  
12 mantle Foothills without the concurrence of Alberta  
13 Trunk, and vice versa.

14 A Yes, if you wish to put  
15 it that way, I think that's a logical conclusion.

16 Q Yes, and to use Mr. Horte's  
17 word then, in your consortium the actions of one can  
18 be effectively vetoed by the other.

19 A Well no, I want to make  
20 this distinction. First we do not have a consortium.  
21 We decided not to have any more study groups or any  
22 more consortia, tiums, and --

23 Q I accidentally used what  
24 has become a term of art. Let me withdraw the word,  
25 "consortium". I put it that in Foothills because of  
26 its voting arrangements it is relatively clear that  
27 your company can veto a proposal of Westcoast, and  
28 vice versa. It's a partnership.

29 A Well, it's a company run  
30 by a Board of Directors in which we have equal repre-



S.R. Blair  
Cross-Exam by Scott

1       sentation, and if one conceived of a deadlock, then the  
2       company wouldn't do anything until both partners were  
3       ready for it to proceed.

4                       Q       And it doesn't make you  
5       and I move very far ahead to describe that as a veto,  
6       does it?   One over the action of the other.

7                       A       I don't want to quibble.  
8       I don't like the word "veto", I don't really think it's  
9       quite apt, but I think I agree with your point, yes.

10                      Q       Well then, let me say  
11       then that it occurs to me that the arrangement that  
12       subsists in your company between Westcoast and Alberta  
13       Trunk is in that sense a similar one to the one Mr.  
14       Horte described in which one of the interests in his  
15       company has a veto over the others.   It may work  
16       better, but in principle it's the same, isn't it?

17                      A       In a very limited way,  
18       yes.

19                      Q       Yes. Well now, I put it  
20       to you that there is no substantial doubt that Pacific  
21       Petroleum controls Westcoast.

22                      A       Well, there is in my  
23       mind. I don't think that that is a fair or correct  
24       statement. I know the Westcoast people well, we've  
25       worked with them for many years, and they don't act  
26       like people who are controlled by any other company.  
27       They don't perform like they were controlled by any  
28       other company.

29                      Q       That may be perfectly  
30       clear, I'm not suggesting for a moment that at any



S.R. Blair  
Cross-Exam by Scott

1 given time the officers or servants of Westcoast are  
2 automaton acting for the majority shareholders, any  
3 more than I would suggest that you were an automaton  
4 for your shareholders, or Mr. Horte for his; but I  
5 take it that Pacific has the capacity to direct the  
6 management of the company because of its shareholding  
7 position, whether it exercises it or not.

8 A No, I don't think so.  
9 Technically, but besides being technical let me get  
10 to the heart of this with you. You get to know these  
11 companies and who makes the decisions and in what kind  
12 of attitudes they reflect, and they're companies where  
13 you know that the thinking is based in the head office  
14 of that company, you know that they act on it, they  
15 act out their own decisions. If you go to see them  
16 about their business you go to their head office and  
17 you deal with their people. That includes as well  
18 companies that are really independent in every way.  
19 They include companies which in some cases have a  
20 very substantial shareholding somewhere else. Let  
21 me call that, that's my Type "A" company.

22 There are other types of  
23 companies where if you want to deal with them on some  
24 subject you get sent to the parent. If you deal with  
25 their president and chief executive, he has to talk to  
26 a vice-president of the parent first.

27 Q I think I understand.

28 A That's my Type "B"  
29 company, and there's a great many Type "B" companies in  
30 Canada, a proliferation of them. What I'm saying is



S.R. Blair  
Cross-Exam by Scott

1 that Westcoast Transmission is a type we know as a  
2 type "A" company.

3 Q All right. I accept  
4 that, but you will go further with me, will you not,  
5 and agree that if a matter of policy arose in which  
6 the shareholders wished to assert their will, in the  
7 face of the management that there is no substantial  
8 doubt that Pacific Petroleum would be able to control  
9 by virtue of its shareholdings.

10 A No, I don't agree with  
11 you. I think there is room for substantial doubt, the  
12 shareholdings being what they are. What I believe to  
13 my information they are.

14 Q Do you know what the  
15 shareholdings of Pacific Petroleum in Westcoast are?

16 A As well as I remember,  
17 Pacific Petroleum owned some 30 odd percent or  
18 something like 35% of the shares of Westcoast. The  
19 Government of the Province of British Columbia owns  
20 somewhere over 10%, somewhere between 10 and 20%, and  
21 they are the two largest shareholders, and I believe  
22 the other shares of Westcoast are quite widely held,  
23 although I don't have detailed information on that.

24 Q Well, have you any  
25 practical doubt that by virtue of those shareholdings  
26 and the diversification of the balance of the 55% that  
27 Pacific Petroleum would probably win most proxy fights?  
28  
29  
30



S.R. Blair  
Cross-Exam by Scott

1 A No, I think that in that  
2 case we have got together there. I think that if  
3 you imagined a proxy fight --

4 Q Well, don't take a  
5 proxy fight, because some publicity attaches to  
6 that sometimes that does not attach to other voting  
7 problems that affect a corporation.

8 A Well, I will give you  
9 a more practical one. Are you asking me to test  
10 this: that suppose Pacific Petroleums wanted  
11 to change the Board of Directors of Westcoast  
12 Transmission to put on to it people who would be  
13 servants of Pacific Petroleums and set out to  
14 do that I think they'd have a heck of a time doing  
15 it, it is a very hypothetical thing, but I doubt  
16 if they would.

17 Q I'll take that and  
18 I take it that you have already conceded that Pacific  
19 Petroleum is controlled by Phillips California.

20 A Well, there many  
21 of the same things that I have said about Westcoast  
22 would apply to Pacific as the kind of company it  
23 is. I understand that the shareholding that  
24 Phillips holds 45% of Pacific Petroleums which  
25 again would win a proxy fight.

26 Q Well, let me put  
27 this to you that if Westcoast Transmission were  
28 envisaged, obviously and correctly in your view,  
29 as an American controlled company, the virtue  
30 of your arrangement is that Alberta Trunk would have



1 a veto in the decisions that Foothills makes if  
2 it were conceived that way.

3 A No, well, I don't get  
4 anywhere near that far because I don't -- I think  
5 that Westcoast Transmission is so remote from management  
6 control or the influence of any American company,  
7 you know, that we've agreed on some quantitative  
8 points, but I don't see it in that role, and  
9 if you are asking me to say, okay, let's forget  
10 that and let's take it as though it were American  
11 controlled then we'd have one American controlled  
12 partner and one Canadian controlled partner.

13 Q And the Canadian  
14 partner in your enterprise would have a veto over  
15 any proposals made by the American partner?

16 A Well, yes, I mean, following  
17 your line of thinking -- I want to respond to your  
18 questions, but I don't want to do that in a  
19 way that gives a wrong impression about the way I  
20 feel about this, because I just don't see it being  
21 like that at all. Westcoast and ourselves have said  
22 that we believe that the company, that Foothills  
23 should be wholly owned by Canadians, that --

24 Q And by Canadians  
25 you mean incorporated companies that are incorporated  
26 in Canada.

27 A Well, let's say by  
28 Canadian investors which could include, yes, which  
29 could include companies incorporated in Canada,  
30 that we believe that it should be a subsidiary of



S.R. Blair  
Cross-Exam by Scott

1 neither one of us, that both of us ought to be a  
2 minority share holders, that we ought to be approximately  
3 equal, that we contemplate and intend to negotiate  
4 additional Canadian company ownership -- additional  
5 ownership by other Canadian companies and that  
6 we intend to offer shares to the Canadian public  
7 as individual investors, to the individuals and  
8 to the institutional investors.

9 Well, in all of this --  
10 so that is the kind of company that we can see that  
11 are creating. Now, at this point in time we  
12 have the situation that I have described, that  
13 Trunk Line 80% of the shares. It put on, I think  
14 five directors initially, three of them are outside  
15 directors -- I am sorry, that is not correct, there  
16 were two outside directors, and then we said, "Look,  
17 we'll put two of our officers in Westcoast, would you  
18 put two of yours in and that will sort of symbolize  
19 our intention that we will evolve into equal partners  
20 and if you say, Okay, let's anticipate that intention  
21 I agree that we are -- we are equal partners in  
22 decision making and if you want me to say that  
23 that means one can veto the other, Okay.

24 Q I don't want to  
25 trouble you with the symbolism of the arrangements,  
26 I want to concern ourselves with the realities of  
27 it for the moment. You would be aware, would  
28 you not, as an experienced financial man, that  
29 Westcoast is perceived, perhaps wrongly, by many  
30 Canadians as an American controlled corporation?



S.R. Blair  
Cross-Exam by ;Scott

1 A No, I am honestly not  
2 aware that that is so.

3 Q Are you aware that the  
4 Financial Post has in its list of American controlled  
5 corporations, listed Westcoast Transmission as one  
6 of them?

7 A No, I wasn't.

8 Q Well, if the Financial  
9 Post should be right, I take it that you and  
10 Mr. HOrte are basically in the same situation, the  
11 Canadian partner has a veto over the American partner.

12 A Well, I follow the  
13 logic of your point and I don't argue with the  
14 reasoning, but I argue with the implication of the  
15 conclusion, the way you've said it --

16 Q I take it what you argue  
17 with is the proposition that Pacific Petroleum  
18 controls Westcoast.

19 A Well, I argue with the  
20 whole proposition that Westcoast is a Type B company.  
21 I say it is a Type A one. I think that there is  
22 one other thing, though that is important to say is  
23 that if then, following your hypotheses, I did  
24 identify Westcoast as an American controlled company  
25 we wouldn't have ever gone equal with them in the  
26 first place, we would have then carefully kept a  
27 majority of the shares in the hands of Alberta Gas  
28 Trunk Line until we did have a majority of Canadian  
29 companies so that I think the hypothesis, if that  
30 is the conclusion,<sup>it</sup> comes to itself --



S.R. Blair  
Cross-Exam by Scott

1 Q Mr. Blair, with you and  
2 Mr. HOrte, I have no doubt that your motives in both  
3 cases are pure no matter what arrangements you may  
4 have entered into. I am just concerned to determine  
5 the extent of the reality of this debate about Canadian  
6 versus American control.

7 Let me, if I can --

8 A To me it is very real.

9 Q I take it also from  
10 what you have said that there is no circumstance  
11 that you can envisage in the next decade in which  
12 you would carry the volume of Alaska gas that the  
13 Arctic Gas Consortium proposes after build up, to  
14 carry.

15 A There certainly  
16 is no circumstance that I can perceive of any  
17 probability that we would do that job.

18 Q And I take it that  
19 you are not asking to do it and going further as  
20 a matter of policy you wouldn't do it.

21 A Well, we wouldn't want to  
22 do it, no.

23 Q You wouldn't do it be-  
24 cause that would risk an unmanageable enterprise  
25 in the hands of others, isn't that the reason?

26 MR. GIBBS: Mr. Blair has  
27 said a dozen times he wouldn't want to do it. I  
28 don't know how more often Commission COunsel wants  
29 him to repeat this.

30 MR. SCOTT:



S.R. Blair  
Cross- Exam by Scott

1 Q Well, let me put it if  
2 that were a condition you wouldn't build the line.

3 A Well, I am trying  
4 to think about this for a moment because if we were  
5 told that the only way that any Arctic gas would  
6 ever get to Alberta from the Canadian Arctic, were  
7 on the condition that our company move the Alaskan  
8 gas across Alberta, I think in those circumstances  
9 we would have to think about it very hard and I  
10 wouldn't say absolutely that we wouldn't do that and  
11 I wanted to go back to something you said in your  
12 last question because you didn't say what I --  
13 you sort of said do I say something and it didn't  
14 come out right. I think you said the reason we  
15 would not want to do it is because it would produce  
16 an unmanageable project in someone else's hands or  
17 words close to that and the reason that we would not  
18 want to do it is because we regard -- we have come  
19 to regard the responsibility of raising the capital  
20 and putting into service that much gas plant --  
21 I mean, that much gas transmission pipeline for  
22 market areas which have nothing to do with us, or  
23 little to do with us to be more responsibility than  
24 the reward of getting the business, that is the reason  
25 that we had the view.

26 Q Can I summarize it  
27 this way, that if you were satisfied that there was  
28 no way Delta gas could get in the foreseeable future  
29 to southern Canada without carrying the load of  
30 Arctic Gas, in those circumstances do I understand you



S.R. Blair  
Cross-Exam by Scott

1 to say that you would be prepared to carry Arctic  
2 Gas?

3 A Yes, I think -- giving  
4 you an individual answer here, you know, something  
5 you haven't contemplated, but I think that --I  
6 would recommend that we would, yes.

7 Q So that if Mr. Horte's  
8 base case is right, that the gas, and I understand that  
9 you say it is not, but if his base case is right,  
10 that the delta gas isn't going to get to the south  
11 without piggybacking, you would be doing exactly  
12 what he is doing. I know it would be slightly  
13 different and modified project, but you would be --

14 A Yes, -- yes, I am  
15 with you.

16 Q And in all, without  
17 any doubt you would be building a 48" line.

18 A No.

19 Q You'd still build a  
20 42".

21 A I don't know. I think  
22 you said "without doubt". I don't know --

23 Q In all probability?

24 A Well, those figures  
25 changed a little. What I was being asked about  
26 last night was two and a quarter billion of Alaskan  
27 gas and a billion of Canadian gas, is that what you  
28 have in mind, this three and a quarter billion cubic  
29 feet a day?

30 Q Yes.



S.R. Blair  
Cross-Exam by Scott

1                                   A     I don't know, the  
2 El Paso -- you see, if we operated our line on the  
3 same -- our 42", proposed 42"       on the same basis  
4 of operating pressure as related to maximum yield,  
5 strength of the pipe as Arctic Gas used, we'd  
6 be up to about 2.8 billion a day and even with  
7 that 42" if you increase the wall thickness a little,  
8 you get up over three billion a day, I think the  
9 El Paso 42" is said to have a capacity of about  
10 3.9 billion cubic feet a day, if I remember correctly  
11 and that they do that by going to a heavier wall  
12 thickness, so that on -- I think a 42" might be right  
13 in there for 3 1/4 billion cubic feet a day.  
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S.R. Blair  
Cross-Exam by Scott

1 Q Well now, you've indicated  
2 all day that even in terms of your present project, if  
3 as a matter of public policy it were deemed desirable  
4 to carry some, which is the word you've used, Alaskan  
5 gas, you might in certain context feel obliged to do  
6 it or feel prepared to do it. What does "some"  
7 mean? What is the maximum amount that you would  
8 carry in that circumstance?

9 A I haven't really thought  
10 about it, to put any maximum on it. The reason I  
11 said that at all was in answer to other questions  
12 which had been, you know, "Is the Maple Leaf project  
13 an isolationist project and refuses to touch gas be-  
14 cause it has originated from an American source?"

15 Q Well, I think we've estab-  
16 lished that you're clearly not. What does "some"  
17 mean? Is there any way of quantifying that?

18 A Well, when I wrote it  
19 I had in mind a number of hundreds of millions of  
20 cubic feet a day, 4, 5, 600 million a day, that sort  
21 of impression in the back of my mind.

22 Q Do you think that would  
23 probably be your top figure?

24 A I don't know.

25 Q It's important, isn't  
26 it, because it leads to the question of looping.

27 A Well, it would depend  
28 so much on what the capacity of the line was at the  
29 time when it was being used for the Canadian gas.  
30 It has not been an important enough factor to -- for



S.R. Blair  
Cross-Exam by Scott

1 me to try and quantify it more.

2 Q All right. Well, let me  
3 move onto something else. Mr. Horte told us that it  
4 was the corporate policy by and large of the consortium  
5 not to hire a staff apart from an executive staff  
6 but rather to contract out principally to Northern  
7 Engineering Services and to some socio-economic con-  
8 sultants the bulk of the advisory work that was done  
9 to prepare the application, and I take it that you're  
10 familiar with that policy during the period of time  
11 when you were associated with the project.

12 A Yes.

13 Q And I take it that the  
14 virtue of that is that it prevented a buildup of  
15 staff and it placed in a central location the expert  
16 advice that the consortium was getting. It may have  
17 been too remote for you, but at least it was central.

18 A Oh, I expect that was  
19 the intention, yes.

20 Q Now, I take it that  
21 since you have left the consortium you, of course, as  
22 you have told us had the advantage of the work as a  
23 part-proprietor, had an advantage of the work that  
24 Northern Engineering Services have done, and the  
25 other consultants to Arctic Gas have done. I take it  
26 that since you have left you have built up or created  
27 a staff designed to expand the work and prepare your  
28 own project.

29 A I don't think we've made  
30 much use of anything, much that Northern Engineering



S.R. Blair  
Cross-Exam by Scott

1 Services had done. My friends working with me might  
2 correct me, but my impression is very little. We have  
3 made use of work that other consultants and particularly  
4 environmental consultants because a lot of our own  
5 were still there, like the Environmental Protection  
6 Board have done. Now as to staff, what we have -- we  
7 believe in -- as has been the practice for the main  
8 gas transmission companies in Canada in recent history,  
9 in doing our own engineering management, and so we  
10 have appointed people to full-time work in Foothills  
11 and to perform the project engineering management.

12 Q The point I'm making,  
13 Mr. Blair, is that between 1972 and 1974 when you left  
14 the consortium, the work of the consortium, the  
15 consulting work, was done substantially by outsiders,  
16 and you had access to that, whether you like it or  
17 want to use it or not.

18 A Yes.

19 Q And that it was not  
20 done by people seconded to Northern Engineering  
21 Services by Foothills and Imperial and the other  
22 companies.

23 A Substantially when we  
24 went into the consortium there were about, I guess,  
25 eventually something like 40 people who were on our  
26 payroll who transferred to the full-time employment of  
27 ARctic Gas. I may be high, it may be 30, but it's  
28 somewhere between 30 and 40.

29 Q Were these expert  
30 consultants?



S.R. Blair  
Cross-Exam by Scott

1 A No, these were engineering  
2 -- they were expert engineering management employees of  
3 our company.

4 Q I see.

5 A Now the top ones of  
6 those, I believe without exception, <sup>have</sup> been -- had their  
7 employment in Arctic Gas terminated and are no longer  
8 there.

9 Q Of the 30 or 40 that  
10 went to Arctic Gas that you've described, how many have  
11 returned to Foothills?

12 A I just don't -- I  
13 can't give you a count, I don't know.

14 Q Would it be unfair to  
15 put it to you, and perhaps its to the credit of your  
16 organization, that what you've been faced with since  
17 the spring of 1974 is building up your own expert team  
18 in-house, with consultants added to replace what was  
19 being done by others at Arctic Gas?

20 A Not quite. You said  
21 it was in early 1974; when we left the consortium in  
22 September, we very quickly opened offices for  
23 Foothills, we put about maybe 15 people in there  
24 immediately who came mostly from the ranks of Alberta  
25 Gas Trunk Company, and then that number has grown  
26 gradually up to about 50 currently, and they are the  
27 people who have filed the application. We had quite  
28 a reservoir of people, I mean Alberta Gas Trunk Line  
29 has one of the largest, certainly one of the largest,  
30 perhaps the largest engineering sections, pipeline



S.R. Blair  
Cross-Exam by Scott

1 engineering sections in Canada, we<sup>have</sup> about 70 engineers  
2 and we went to that pool of experience for our engineer-  
3 ing management.

4 Q All right, I 'm sure you  
5 have supremely experienced people, but what I'm saying  
6 to you is that at that moment, apart from the property  
7 that you had in Arctic Gas and the studies and reports  
8 that were produced, and your own general knowledge  
9 and expertise, at that moment you were substantially  
10 starting from scratch.

11 A Yes.

12 Q And that it has been a  
13 long haul to come to now with a fully -- with a full  
14 application and supporting material.

15 A It was quite a job they  
16 did, yes. It wasn't now, of course. The application  
17 was filed on May 1st, and the real stress of putting  
18 it out occurred in the first four months of this  
19 year.

20 Q Well now, on the subject  
21 of looping did I understand you to say to Mr. Templeton  
22 this morning that it was your judgment that there would  
23 be no looping of your line before 1984-85, and that  
24 after that the question -- the possibility of looping  
25 was problematical?

26 A No, I don't think that's  
27 quite accurate to repeat it that way in those words.

28 Q Well, then for what period  
29 of time will there be no looping of your line?

30 A Well, the capacity of the



SR. Blair  
Cross-Exam by Scott

1 system that we have applied for is approximately suffi-  
2 cient to provide transmission services for the total  
3 reserves which our consultants project will be developed  
4 in the delta through the 1980's, up until sometime in  
5 the 1990's. I think it's a little less than sufficient  
6 but not enough to make a great deal of difference, and  
7 of course the forecasts of future reserves are very  
8 much a matter of conjecture and there's not reason  
9 to change the size before us now.

10 So if they are correct, then  
11 we would not need to loop that line at all. To move  
12 gas from delta sources there remains the possibility that  
13 the use of the line will be needed to move gas from  
14 other Canadian, northern Canadian sources, and that's  
15 why I'm being a bit careful in giving you any absolute  
16 schedule for there being looping or not looping.

17 Q In the 1980's can you  
18 envisage any situation in which you would be prepared  
19 to loop the line in order to carry American gas?

20 A Well, it sounds pretty  
21 adamant to say "No", but I can't -- I don't anticipate  
22 such a situation. I can, if you like, construct  
23 theoretically a number of things that might happen  
24 which would produce such a situation, but I don't  
25 believe that it will occur myself.  
26  
27  
28  
29  
30



S.R. Blair  
Cross-Exam by Scott

1 Q Well now in your evidence  
2 at page 26, the answer to question 33, you were  
3 asked about Foothills' capital requirements and you  
4 say for the facilities necessary to enable first year  
5 delivery of 800 million cubic feet a day,  
6 1,775,000,000 -- have I read that right, I ?

7 A Yes.

8 Q All right, can you  
9 tell me what funding will be required to complete  
10 the system, that is to produce 2,400 million  
11 cubic feet a day?

12 A I can do it approximately  
13 by memory or go to the financing plan in the  
14 submission and give you the amounts year by year.

15 Q Perhaps you can do it  
16 by memory and Mr. Gibbs can correct it later  
17 if your memory fails.

18 A Well, in my memory the  
19 cumulative capital investment to Foothills to  
20 that point of capacity is something like 2.4 billion  
21 dollars, but I will be looking it up as we talk,  
22 if you like.

23 Q And does that --

24 THE COMMISSIONER: Wait a  
25 moment.

26 MR. SCOTT: I am sorry.

27 A A distinction we  
28 ought to settle here is whether your interest is  
29 in the funds required from outside sources to finance  
30 the construction or whether you're interested in the



S.R. Blair  
Cross-Exam by Scott

1 cumulated investment in gas transmission facilities  
2 because they are different numbers.

3 Q I am interested in what  
4 I take it is, the cumulative investment, that is,  
5 the amount of money you will have to put  
6 up.

7 A Well, I am sorry, I  
8 just realized that the last words of your question  
9 contradicted each other. The cumulative investment  
10 and the amount of money you put up are two different  
11 things.

12 Q Allright, give me  
13 both figures.

14 A The cumulative investment  
15 in plant property and equipment without taking into  
16 account any depreciation or amortization, so just  
17 the original investment, is estimated at  
18 \$1,791,000,000 in 1979. I am referring here to  
19 page 4a4 of exhibit 197.

20 Q Will that produce a  
21 capacity of 2,400 million cubic feet a day?

22 A No, that's the  
23 capacity to put the thing in service at 800 million  
24 a day.

25 Q Yes.

26 A Increasing -- I won't  
27 unless you ask me to, give all the intervening years --  
28 to 2,300,000,000 in 1982, by which time the capacity  
29 of the pipeline would be up to 2.4 billion cubic  
30 feet a day. Our financial predictions then continue



S.R. Blair  
Cross-Exam by Scott

1 that investment as flat -- I mean as no additional  
2 investment being required although there is this,  
3 I have said that if you put one of these lines right  
4 up to the full operating pressure allowed by the  
5 code which we do not propose to do at this stage,  
6 then you can get about 2.7, 2.8 billion a day out  
7 of the line and you would put in some more compressor  
8 stations to do that and that has not been estimated  
9 here.

10 I will give you the correspon-  
11 ding review of the funds to be raised which we know  
12 is 1,775,000,000 to put the line in service.

13 THE COMMISSIONER: Do you  
14 want to try to finish tonight?

15 MR. SCOTT: I'd rather like  
16 to, but I leave it in my colleagues hands --  
17 your hands, sir.

18 A I am sorry -- I keep  
19 going to the wrong table.

20 I've tried to find this  
21 in summary so that I don't have to take further  
22 time to add up a lot of figures and I am not  
23 succeeding right at the moment.

24 Q I can pass on to something  
25 else and Mr. Gibbs in due course can point out  
26 where that figure can be found.

27 A I'd be pleased to,  
28 yes.

29 Q All right.  
30 Well, now, let me ask you, do those figures include



S.R. Blair  
Cross-Exam by Scott

1 only the line that will be constructed. --

2 THE COMMISSIONER: Excuse  
3 me, I can't remember now what the figures are.

4 MR. SCOTT: The amount of  
5 the funds that are required that will be raised  
6 outside Foothills, is that an accurate way to put  
7 it, Mr. Blair. -- in public.

8 A Yes, the funds to be  
9 required to be raised by financing.

10 Q Yes. Well, now  
11 do I understand correctly that those figures relate  
12 only to those portions to the line that are constructed  
13 in the Northwest Territories?

14 A Yes.

15 Q Yes. Have you in  
16 that document or elsewhere the funds that will be  
17 required over the first five years to build whatever  
18 is built in the province of Alberta?

19 A Not in this document  
20 but in the Alberta Gas Trunk Line (Canada) filing  
21 that those figures occur.

22 Q Yes, do you know roughly  
23 what they are?

24 A Yes, I gave them yester-  
25 day.

26 MR. GIBBS: Rather than rough  
27 figures, if my friend wants these numbers I think  
28 he should give us the opportunity to get them out  
29 of the books and put them to the Commission.

30 THE COMMISSIONER: Sounds



S.R. Blair  
Cross-Exam by Scott

1 reasonable.

2 MR. SCOTT: That will be  
3 fine. I have difficulty finding them and if Mr.  
4 Gibbs can find them for me and read them in tomorrow  
5 or some other time, that will be satisfactory.

6 Q Well, Mr. Blair,  
7 in raising these funds, are you contemplating any  
8 restriction on the places where you will borrow?

9 A Yes.

10 Q What are those restrictions?

11 A Well, these are described  
12 in detail in the same section, the financing plan  
13 within exhibit 197, they provide in general for --  
14 did you say funds that we would borrow -- are you  
15 talking only about the debt part of this?

16 Q Yes.

17 Q Well, they provide  
18 for our going to the Canadian debt market for  
19 what we believe is reasonably available which has been  
20 estimated that the first number is \$321,000,000,  
21 it turns out to be the largest figure for Canadian  
22 first mortgage bond private placement investors,  
23 and \$300,000,000 to the United States; first mortgage  
24 bond private placement investors, \$335,000,000  
25 from the Canadian Banking syndicate; \$125,000,000  
26 from the United States Banking syndicate and that  
27 completes the debt funds.

28 Q Well, I think what I  
29 directly wanted to ask you is are you assuming  
30 for yourselves a kind of Canadian content rule



S.R. Blair  
Cross-Exam by Scott

1 that you will not accept beyond a certain proportion  
2 of debt or shares from non-Canadian sources?

3 A Well, yes, now you  
4 introduce shares which I think for the first  
5 time, yes, absolutely, we aer saying that we believe  
6 this equity should be placed with Canadian sources.  
7 In the case of debt it is not really so much a matter  
8 of principle, we think that a debt placed in  
9 Canada is necessarily -- nothing like in the same way  
10 do we think it is necessarily superior to debt  
11 placed in other countries, but there are factors  
12 as the exchange question, the question about whether  
13 the pay is Canadian or U.S., there is the factor  
14 of our relationship with the institutional lenders  
15 that loan Westcoast and ourselves our funds from  
16 year to year and we have -- we would like to keep  
17 a substantial portion of the debt base in  
18 Canada.

19 Q Well, I know everybody  
20 would like to do that, but what I am saying to you,  
21 is it a condition of your project, first of all  
22 dealing with the equity, that you will not accept  
23 foreign equity?

24 A Yes, as a matter of pol-  
25 icy although one would have to be careful of expressing  
26 this in a technical way because -- well, we wouldn't  
27 want to close a situation which a Canadian owner  
28 might then wish to resell some of his shares to  
29 buyers which would include Americans, that would perhaps  
30 reduce the marketability of the shares and it is



1 conceivable that some United States company might  
2 bring something to the project of sufficient value  
3 that if they asked to have a very small, relatively  
4 small -- or any foreign country -- these things could  
5 apply eslewhere than in the States, a very small  
6 equity investment, it is conceivable that we  
7 would consider it favourably, but in general  
8 we believe that the common shares should be placed  
9 in the hands of Canadian investors.

10 THE COMMISSIONER: Well,  
11 if your initial sale of shares was to Canadian  
12 investors, the Federal Government Foreign Control  
13 Review Board would have authority to examine any  
14 attempt to buy -- the foreign purchaser to buy a  
15 majority of shares, that would be a restraint  
16 built into the marketability of the shares --  
17 built into the marketability of the shares of  
18 anyone. Any Canadian company that is starting  
19 off nowadays.

20 A Yes.

21 MR. SCOTT: Of a majority.

22 Q Do you exclude from  
23 this category of purchaser, Canadian incorporated  
24 companies that are substantially wholly owned  
25 subsidiaries of American companies?

26 A Yes.

27 Q I take it therefore  
28 that the principal oil companies will not be  
29 acceptable purchasers of any of the shares of  
30 Foothills?



S.R. Blair  
Cross-Exam by Scott

1 A Well, your reasoning  
2 is correct. I wouldn't go out of my way to tell  
3 any other companies that they were not acceptable,  
4 but no, we would not offer the shares to companies  
5 of that sort.

6 THE COMMISSIONER: Well,  
7 the three principal producers in the Delta would then  
8 be excluded?

9 A Yes.

10 MR. SCOTT:

11 Q Are you prepared as a  
12 condition to build in a restriction that the  
13 sales -- the shares will not be resold to any such  
14 corporations?

15 MR. GIBBS: I wonder, sir,  
16 how practical that is, whether it's possible even?

17 MR. SCOTT: It may be  
18 impossible but -- I am sorry --

19 MR. GIBBS: Let me finish.  
20 -- whether it is in fact possible under present  
21 Candian law and corporate law and so on to put such  
22 a restriction on the trading of shares.



S.R. Blair  
Cross-Exam by Scott

1 MR. SCOTT: Mr. Commissioner,  
2 it may be impossible -- I'm sorry.

3 MR. GIBBS: It's asking Mr.  
4 Blair a lot to ask him to put in a restriction which  
5 may not in fact be legal.

6 MR. SCOTT: I wouldn't for a  
7 moment ask him to do that, and I'm not asking him to  
8 tell me what the law is. I'm asking for an expression  
9 of his corporate policy which will be implemented, no  
10 doubt, if the law permits.

11 MR. GIBBS: Well, how can he  
12 have a corporate policy which is against the law?  
13 I don't know any way that you can restrict the trading  
14 of a share from one party to another.

15 THE SCOTT: The reason, Mr.  
16 Commissioner, I am concerned is we've had Mr. Blair's  
17 evidence in which he indicates his commitment to  
18 virtually total Canadian ownership of this project,  
19 and I'm just anxious to see how far that carries us,  
20 apart from the expression of intention that he's  
21 given in evidence, and what I ask here is, if the  
22 law permitted, would he be prepared to make such a  
23 restriction?

24 A Well, as a matter of  
25 my own view and the policy that I would hope to recomm-  
26 end, the answer is yes, I believe that there should  
27 be clear arrangements to see that the control of  
28 this company does not pass to foreign ownership. Now  
29 as Mr. Gibbs brings out, how you do it legally isn't  
30 simple, and what I'm particularly cautious about is



S.R. Blair  
Cross-Exam by Scott

1 if you sell shares to individual investors, as we  
2 intend to, and then if you tell them that under no  
3 circumstances can they re-sell to anyone else who is  
4 not a Canadian, then you really create a problem  
5 because of marketability. So I think the way to  
6 approach it is for the sponsoring companies to keep  
7 enough shares that that cannot happen, and I mean the  
8 control can't pass to an American company and they can  
9 have an agreement among themselves on re-sale of their  
10 shares to protect. The other way you can approach it  
11 is through the voting and non-voting shares, shares  
12 having special voting privileges, as is the arrangement,  
13 for instance, of our own Alberta Gas Trunk company,  
14 so I'm with the objective, I'm completely in favor of  
15 the objective of making arrangements to ensure that  
16 control does not pass to an American company, or to  
17 any foreign companies.

18 Q And I take it all I  
19 am interested in is your objective, because I know  
20 when you instruct Mr. Gibbs, he will achieve the  
21 objective, if the law permits. Now let me just pass  
22 to what I think is the last matter. You said in  
23 your prepared evidence that transporting the gas to  
24 the communities would affect a saving of \$500 per  
25 household per year in the Northwest Territories. Now  
26 that is a very attractive promise that will no doubt  
27 achieve some publicity, and I want to see if I under-  
28 stand what is at stake here.

29 First of all, your proposal  
30 is to carry gas only to the limits of the community,



S.R. Blair  
Cross-Exam by Scott

1 is that correct?

2 A Yes, when you say "the  
3 only" I don't want there to be any impression that  
4 we refuse to distribute it in the community, where  
5 we say, "D.K., that's it, that's as far as we're  
6 going to go."

7 Traditionally distribution  
8 services in communities have been operated by either  
9 smaller companies or by municipal organizations. We  
10 assume that that will occur again here, and we don't  
11 want to preempt that business. So we're saying, "Let's  
12 assume that we take it to the city gate or the  
13 settlement gate."

14 Q Well, I take it that  
15 you're not amending your application, you're not pre-  
16 pared to distribute at the moment in these communities  
17 if there is no other mode of distribution -- or are  
18 you?

19 A Well, I think I just  
20 said we are.

21 Q All right.

22 A But we do not suppose  
23 that we will be invited to do it, so that for the  
24 moment we haven't applied to do it.

25 Q In the event that you  
26 are invited to do it, do I understand as a matter of  
27 policy that you would be prepared to apply to do it  
28 in the Northwest Territories communities?

29 A We would generally be  
30 prepared to see that it is done. There may be good



S.R. Blair  
Cross-Exam by Scott

1 reasons for Foothills as a corporation not doing it  
2 itself. It might have a subsidiary do it, or it  
3 might get in a joint venture with a gas distribution  
4 or propane distribution company and do it, but what  
5 I do say definitely is that we would see that it is  
6 done one way or another, we would absolutely see it's  
7 done.

8 Q Well, the observation  
9 that \$500 will be saved, I take it, is a figure that  
10 has been produced by your consultants in which you  
11 have no personal knowledge.

12 A No, it's a figure  
13 produced by the Foothills organization and given to me  
14 by John Burrell.

15 Q Yes, but it is a figure,  
16 is it not, that contains in it a number of projections,  
17 each of which must be reasonably accurate so that the  
18 end figure is accurate.

19 A Yes, when you said I  
20 had no personal knowledge, he showed me the working  
21 sheets and it's a figure which calculates the amount  
22 of fuel oil that is used, of heating oil that's  
23 used in each of the communities, the number of house-  
24 holds, and it calculates the cost of the heating oil  
25 and the cost of gas under this arrangement, and deducts  
26 the two and comes up with that average. I have seen  
27 the sheet; I don't happen to have it here.

28 Q So among the items that  
29 would have to be determined in order to get that  
30 \$500 figure you produced, are first of all the projected



S.R. Blair  
Cross-Exam by Scott

1 cost of alternative fuels.

2 A Yes.

3 Q The projected cost of  
4 gas at the time of delivery.

5 A Yes.

6 Q The projected transmission  
7 costs.

8 A Yes.

9 Q The cost of heating an  
10 average household, by either method.

11 A Yes, the quantity of  
12 fuel required to heat an average household, yes.

13 Q And the cost of trans-  
14 ferring, where appropriate, one heating mode to another.

15 A Yes, all those matters  
16 were taken into account.

17 Q Yes, and I take it that  
18 you will produce those working papers that provide that  
19 figure so an assessment can be made up?

20 A I am sure that Mr. Burrell  
21 can do that. I think he intends to at least give  
22 a summary result of them at the time he appears.

23 Q Well, can he also provide  
24 for us a sample comparison in concrete terms of one  
25 community? You can select whatever community you  
26 propose.

27 A Yes, he can.

28 Q Well now, in the --

29 MR. HOLLINGWORTH: Could you  
30 just give me that requirement again, Mr. Scott?



S.R. Blair  
Cross-Exam by Scott

1 MR. SCOTT: What I want  
2 essentially is a breakout or the working papers which  
3 show all the projections which are necessary components  
4 to achieve the \$500 figure, and the way they are  
5 determined.

6 In addition, I would like an  
7 analysis of a particular community with breakouts of  
8 the same figures, so that its accuracy can be assessed  
9 with respect to one community.

10 A I'm sure you'll get  
11 what you're asking for.

12 MR. GIBBS: We'll produce the  
13 material, recognizing that if <sup>it's</sup> into the future it's a  
14 forecast.

15 MR. SCOTT: Well, I recognize  
16 it's a forecast, but it's a forecast that has been  
17 made with a great deal of assurance and aplomb to  
18 the public, and I regard it as my function to determine  
19 that it's justified. Mr. Blair has said that it's been  
20 done by somebody else and I'll be grateful to have  
21 the somebody else's work to evaluate as soon as that  
22 can be achieved.

23 MR. GIBBS: Well yes, I said  
24 I'd produce it but warned you that it was a forecast.

25 A I don't believe - I don't  
26 recollect it being announced with aplomb.

27 MR. SCOTT: I said that as a  
28 compliment, Mr. Blair, referring to your manner of  
29 presenting your evidence.

30 A Well, what we did



S.R. Blair  
Cross-Exam by Scott

1 announce very particularly was the tariff policy, we  
2 did emphasize that.

3 MR. SCOTT: Excuse me one moment.

4 THE COMMISSIONER: Excuse me.

5 I don't mind sitting --

6 MR. SCOTT: I think I have  
7 one more question.

8 THE COMMISSIONER: Oh, all  
9 right.

10 MR. SCOTT: Q Page 32 of  
11 your prepared evidence you refer to transmission arrange-  
12 ments and in the last sentence you state that you  
13 were also negotiating gas purchases through a sister  
14 organization, the Gas Initiatives Joint Venture which  
15 has been formed between Alberta and Quebec companies.  
16 First of all, can you tell me the companies that are  
17 parties to that venture?

18

19

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S.R. Blair  
Cross-Exam by Scott

1 A Yes. The Quebec one is  
2 a company called Soquip, Society Quebec Initiatives  
3 Petrolique, but it goes by the name of Soquip. The  
4 Alberta company is a wholly owned subsidiary of the  
5 Alberta Gas Trunk Line Company called Algas Mineral  
6 Enterprises Limited, and they have formed a joint  
7 venture which goes by the name of Gas Initiatives.  
8 We took the "Initiatives" out of Soquip's name, it  
9 seemed to fit, and they have -- then they have a company  
10 that acts as a trustee for the Joint Venture and  
11 which is called Gas Initiatives something Limited.

12 Q What is the object of  
13 Gas Initiatives Joint Venture?

14 A It's to obtain a  
15 stronger position for the two companies and/or the  
16 markets they serve in the future obtaining of gas  
17 supply from Canadian sources by actions such as these  
18 and they're listed as the objects of the venture,  
19 one to buy natural gas in place, one is to buy  
20 natural gas reserves in place;  
21 a second is to advance payments to producers in  
22 consideration of having the first right to buy their  
23 gas in the future;  
24 a third is to advance funds for the drilling of  
25 development wells by producers in consideration of  
26 their agreeing to sell part of their gas at stipulated  
27 prices;  
28 and a fourth object is to participate in exploration  
29 activities, exploration expenditures by producers who  
30 are looking for gas, all in the terms of reference



S.R. Blair  
Cross-Exam by Scott

1 geographically, they are all in the area which is  
2 tributary -- which is in or tributary to the Maple  
3 Leaf project, as it's described. That's the area in  
4 the Northwest Territories through the Mackenzie Valley  
5 and down through Alberta.

6 Q Yes. Is it going to play  
7 any role in the distribution of gas?

8 A Yes, I think it will.  
9 In the first place we have in mind that gas acquired  
10 by Gas Initiatives from sources in the Northwest  
11 Territories would be made available through Foothills  
12 as the source gas for the communities, if they want it.  
13 I mean it would be offered as a source gas for the  
14 communities, that's one of the things we had in mind.  
15 Of course I know that's not a very big market or big  
16 responsibility, but we thought we'd cover it that  
17 way.

18 Q When you say it would  
19 play a role in the distribution of that gas, it would  
20 play that role.

21 A Do you want me to go  
22 further?

23 Q Well, did I understand  
24 that Gas Initiatives in certain parts of Canada is  
25 going to be a distributing company?

26 A No, no, we don't intend  
27 that. But it would be a company getting gas supply  
28 for its sponsors or for their markets.

29 Q But is it going to play  
30 a role in any sense analogous to say Consumers Gas or



S.R. Blair  
Cross-Exam by Scott

1 Union Gas in Ontario in any of the territories through  
2 which it's concerned?

3 A No, that's not within  
4 its objects, or its objectives.

5 MR. SCOTT: Those are all the  
6 questions I have. Thank you, Mr. Commissioner. Thank  
7 you, Mr. Blair.

8 THE COMMISSIONER: Any re-  
9 examination?

10 MR. GIBBS: Yes. I wondered,  
11 sir, if you'd let me do it tomorrow morning.

12 THE COMMISSIONER: Certainly.  
13 Well, we'll adjourn until nine o'clock tomorrow morning.

14 (PROCEEDINGS ADJOURNED TO AUGUST 21, 1975)  
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# MACKENZIE VALLEY PIPELINE INQUIRY

IN THE MATTER OF APPLICATIONS BY EACH OF

(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE YUKON TERRITORY AND THE NORTHWEST TERRITORIES; and

(b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE NORTHWEST TERRITORIES,

FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION, OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE PROPOSED PIPELINES

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

August 21, 1975.

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PROCEEDINGS AT INQUIRY

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APPEARANCES:

Mr. Ian G. Scott, Q.C.  
Mr. Stephen T. Goudge,  
Mr. Alick Ryder and  
Mr. Ian Roland  
for Mackenzie Valley  
Pipeline Inquiry;

Mr. D. M. Goldie, Q.C.  
Mr. Jack Marshall,  
Mr. Darryl Carter, and  
Mr. John Steeves  
for Canadian Arctic Gas  
Pipeline Limited;

Mr. Reginald Gibbs, Q.C.  
Mr. Alan Hollingworth  
for Foothills Pipelines  
Ltd.;

Mr. Russell Anthony,  
Prof. Alastair Lucas  
for Canadian Arctic  
Resources Committee;

Mr. Glen W. Bell and  
Mr. Gerry Sutton  
for Northwest Territories  
Indian Brotherhood and  
Metis Association of the  
Northwest Territories;

Ms. Leslie Lane  
for Inuit Tapirisat of  
Canada and the  
Committee for Original  
Peoples' Entitlement;

Mr. Ron Veale and  
Mr. Allen Lueck  
for the council for the  
Yukon Indians

Mr. Carson H. Templeton  
for Environment Protec-  
tion Board;

Mr. David Reesor  
for Northwest Territories  
Association of Muni-  
cipalities

Mr. Murray Sigler  
for Northwest Territories  
Chamber of Commerce

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M.A. FAWCETT,  
Leo BOUCKHOUT,  
K. GILLESPIE,  
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- In Chief

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August 21, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. SCOTT: I think we're all ready, Mr. Commissioner, those of us who are here are all ready.

S. ROBERT BLAIR, resumed:

RE-EXAMINATION BY MR. GIBBS:

Q Mr. Blair, yesterday you mentioned the Gas Initiative Joint Venture and SOQUIP, and so the record will be clear, would you explain what Soquip is?

A Soquip is a Crown corporation of the Government of the Province of Quebec charged with the exploration and development of oil and gas production in Quebec, and in other areas of Canada.

Q Yesterday, Mr. Blair, Mr. Scott went through a series of questions apparently designed to show there was no difference between Canadian Arctic Gas and Foothills, concluding that under the circumstances that he postulated you would be doing the same as Horte was doing. I think those are his precise words. Can you confirm that in your answer you didn't intend to mean that the Foothills project would be exactly the same as the Canadian Arctic Gas project?

A Yes, I do want to confirm that. In that series of questions I understood that our reasoning was that if all of the external circum-



S.R. Blair  
Re-Exam

stances should be the same for either project, that then by definition really each project would have the same job to do; and I agreed with that logic. But if all the circumstances were the same it doesn't follow at all that we would perform the project in the same or even a similar manner to Arctic Gas. We are very concerned with the matter of management, ownership, control of the Canadian company. We would not become attached to a consortium of a large number of United States companies for the management of a project in Canada. The principles that were described in the direct evidence as built into our original Gas Arctic plan in 1970 and '71 would pertain including particularly the principle that the job of building the project in Canada is basically a job for the Canadian pipeline companies. It's in our own back yard and a job that can be done and we believe is much better done by such an organization.

MR. MARSHALL: Mr. Commissioner,

MR. GIBBS: Q Would you now --

MR. MARSHALL: -- if I may,

Mr. Gibbs, I realize it's early and we may not be all awake yet, but surely Mr. Gibbs is not going to proceed with his re-examination on the basis of statements to Mr. Blair such as, "Mr. Blair, will you confirm that you did not mean to say that?"

Now, surely Mr. Gibbs --

THE COMMISSIONER: You felt that was a leading question?

MR. MARSHALL: -- I felt it



S.R. Blair  
Re-Exam

1 was a little leading, yes.

2 MR. GIBBS: Well, sir, although  
3 we're not following the rigid rules of courtroom prac-  
4 tice --

5 MR. MARSHALL: I've noticed  
6 that.

7 MR. GIBBS: -- my recollection  
8 is that a certain amount of leading questions are  
9 permitted in re-direct.

10 Q Mr. Blair, would you now  
11 focus your memory back on Mr. Goldie's cross-examination  
12 and particularly where he was postulating a set of  
13 circumstances with the Ontario Utility Company ,  
14 the Canadian partner in CAGSL having 35% equity. Have  
15 you seen any announcement or any indication of what  
16 percent of the equity in CAGSL those companies will have?

17 A No. I'm quite sure that  
18 there has been no information on the distribution of  
19 shares that is intended by Arctic Gas and CAGPL, and  
20 I took the 35% just completely as an assumption as  
21 far as I know, I don't know any support for the figure;  
22 I have seen the statements that some of the utility  
23 companies would, if they could get favorable rate  
24 treatment and have the amount included in the rate  
25 base, and certain other things are done that they would  
26 subscribe -- be prepared to subscribe to equity; but  
27 I don't -- I haven't seen anything that relates or  
28 supports the figure of -- relates to or supports the  
29 figure of 35%.



1 Q Sir, I ask you  
2 to direct your attention to the series on the  
3 filing of the Canadian Arctic Gas Application in  
4 March when you said that you had reservations.  
5 The basis of that filing, sir, was it not, that there  
6 was urgency to file something at that time?

7 MR. MARSHALL: Well, sir,  
8 again, that is a leading question. Is Mr. Gibbs  
9 unable to let the witness answer a question without  
10 putting words in his mouth?

11 MR. GIBBS: Well, Mr.  
12 Commissioner, surely we are not going to get down  
13 to those precise rigid rules. If we are then the  
14 whole framework is recast again and this is,  
15 after all, re-direct and there is no attempt to put  
16 words in the witness's mouth in the direct examination,  
17 but this arises out of matters which my friends,  
18 associates, brought up and in my submission I am  
19 entitled to bring out the evidence in that fashion.

20 THE COMMISSIONER: Well,  
21 I think that Mr. Marshall's objections to these two  
22 questions are in the circumstances well taken.  
23 We are not bound by the rules of evidence or court  
24 procedure or anything else, but I think in fairness  
25 the questions should be something like, was there  
26 any particular reason for that filing being made  
27 at that time. I think it's for Mr. Blair to  
28 give the evidence about what that reason was rather  
29 than having it suggested to him.

30 MR. GIBBS: All right, sir.



1 Q Mr. Blair, was there  
2 any reason for the filing in March of 1974?

3 A Yes, having had the  
4 opportunities to check back on that matter, I  
5 want to testify that the situation was that it was  
6 alleged that it was important to file an application  
7 of some form and that it was carefully arranged that  
8 any member company might support or contest the  
9 application, that any company then a member might  
10 continue or might remove itself from the group and  
11 that the filing did not oblige or stipulate any  
12 future support from any of the members. That was  
13 a matter discussed by many -- by several of the  
14 other members as well as the Alberta Gas Trunk Line  
15 company and so arranged.

16 Q Then Mr. Goldie brought  
17 up the question of Pan Alberta. Can you explain to  
18 the Commission the basis of the Pan Alberta transaction  
19 application to the National Energy Board?

20 A Yes, the point here  
21 is that it may otherwise seem as though while we  
22 have been protesting an emphasis on exports in the  
23 CAGPL application that we were concurrently ourselves  
24 pressing for export through another affiliate and  
25 the point I want to leave clearly on record is  
26 that the Pan Alberta gas marketing transaction was  
27 one in which what was then thought to be an available  
28 temporary surplus of Alberta gas would be fur-  
29 nished to an American buyer on the basis that after  
30 the anticipated pipeline from the Artic was in place



1 the Alberta company, Pan Alberta would have had in  
2 the contracts a complete right of re-purchase of all  
3 the quantities of gas that had been sold into export  
4 so that it was conceived as a zero export, as we called  
5 it at the time, a zero export transaction in which  
6 under terms of price that were particularly favourable,  
7 the Alberta gas would be advanced for a short term,  
8 for a term of not more than six years against a  
9 later repayment of Alaskan gas.

10 The contract that was later  
11 terminated by Pan Alberta when we realized that our  
12 assumption and our calculation in 1971, that there  
13 would be a temporary surplus of Alberta gas was  
14 not being borne out by the trends and so we terminated  
15 that contract and resold gas from those sources to  
16 Canadian buyers, to Gaz Metropolitan in Quebec in  
17 particular.



S.R. Blair

Re-Exam

1 Q Then lastly, Mr. Blair,  
2 Mr. Goldie raised the question of jurisdictional  
3 divisions within Canada for gas travelling from the  
4 Arctic. Would you explain, just to clear that point  
5 up, the various regulatory jurisdictions under which  
6 gas from Alberta finds its way, for example, to  
7 Toronto now?

8 A I'd like to explain this  
9 in the context of removing or relieving concern that  
10 the existence of a link in a federal project, which  
11 link is tied in part to a provincial jurisdiction, is  
12 a serious problem, because I don't believe it's a  
13 problem of any seriousness at all. It is rather  
14 interesting, I think, to recognize that under the  
15 present arrangements by which gas is supplied to all  
16 of Central Canada, and the arrangements under which  
17 most of the gas that Central Canada requires for many  
18 decades in the future will continue to be received,  
19 is an arrangement which perhaps to illustrate the  
20 case of gas supplied to Consumers Gas in Toronto,  
21 Consumers Gas serving Toronto and other areas of  
22 Southern Ontario, the gas starts in Alberta where it's  
23 owned by producers, it's gathered and transmitted  
24 through the province by the provincial jurisdiction  
25 company, the Alberta Gas Trunk Line Company Limited,

26 Q Under Alberta Public  
27 Utilities Board jurisdiction?

28 A Yes, and then enters  
29 the facilities of TransCanada Pipelines, a federal  
30 company, of course, and is moved across the provinces



S.R. Blair  
Re-Exam

1 of Saskatchewan and through Manitoba, and then in  
2 large part enters the facilities of the Great Lakes  
3 Transmission Company, a United States company, under  
4 jurisdiction of the Federal Power Commission in all  
5 ways, including rates, and is moved across Wisconsin  
6 and Michigan and down to Sarnia, and there enters  
7 the facilities of the Union Gas Company, an Ontario  
8 chartered company and one operating under the jurisdic-  
9 tion of the Ontario Energy Board, in all matters  
10 including rates, and is then eventually and finally  
11 delivered by Union Gas Company to Consumers Gas  
12 Company in Toronto, so that one has a sequence of  
13 various companies operating under a number of juris-  
14 dictions of which by far the most important distinction  
15 is the United States federal jurisdiction as compared  
16 to the two or three Canadian jurisdictions, and this  
17 arrangement has been working for as long as that  
18 system has been in place, and we know as a practical  
19 matter that it does work and that our own provincial  
20 companies link in what is overall obviously an  
21 interprovincial and federal undertaking, is performed  
22 by agreement as was mentioned in, briefly in the  
23 testimony yesterday, in my testimony. Our rates  
24 have been agreed by negotiation through all of these  
25 years with only one instance of complaint, and regula-  
26 tory review.

27  
28 The rate-making and other  
29 regulatory practices of the Canadian provincial juris-  
30 dictions are so similar, based so much on the same  
31 principles as those of Canadian federal jurisdictions



S.R. Blair  
Re-Exam

1 that I really don't think there's a practical charge  
2 to be made against our proposal, and our company con-  
3 tinues to be involved in the movement of other gas  
4 destined to markets outside of the Province of Alberta.

5 MR. GIBBS: Mr. Commissioner,  
6 that completes the re-direct of Mr. Blair.

7 THE COMMISSIONER: Thank you.  
8 Thank you very much.

9 (WITNESS ASIDE)

10 MR. GIBBS: The next panel, sir,  
11 consists of a panel of one, Mr. R.H. Mackie, and  
12 the subject matter of his evidence will be the need  
13 for the pipeline and in speaking to that he will  
14 briefly review natural gas requirements in Canada.  
15 Mr. Mackie?

16 MR. SCOTT: Mr. Commissioner,  
17 I have advised my friend that I propose at this point  
18 to submit to you that the evidence of this panel is  
19 not relevant to the matters that have to be considered  
20 in Phase 1. In making this submission we have the  
21 advantage which we would not have in a Court room  
22 proceeding, of having not merely the summary of the  
23 evidence but the question and answer report of the  
24 evidence in chief, a copy of which you have before  
25 you now, thanks to Mr. Gibbs. An examination of this  
26 relatively short question and answer exchange indicate  
27 that the witness is being invited to give evidence  
28 principally on two matters:

29 First of all, a forecast made  
30 by him of future requirements for Canadian natural



1 gas, in Canada, and a forecast made by him of the  
2 future natural gas supply in Canada, and the conclusion  
3 that he draws from that is that there is a deficiency  
4 which can be met by the -- that there is in the future  
5 a deficiency that can be met by allowing the application  
6 of Foothills to construct to proceed.

7 In my respectful submission,  
8 having read the order-in-council and indeed the  
9 preliminary rulings, there is nothing in any of those  
10 documents that justify the Inquiry to hear or pass upon  
11 that evidence, at least at this stage.

12 If we turn first to the order-  
13 in-council of March 21, 1974, you will see that in  
14 the second recital it is said, after referring to  
15 the fact that applications have or may be made, the  
16 order goes on:

17 "And whereas it is desirable that any such  
18 right-of-way that might be granted,"  
19 and I emphasize here, of course that it will be granted  
20 not by the Inquiry or indeed by the National Energy  
21 Board, but rather by the Minister or the Cabinet,

22 "the subject of such terms and conditions  
23 as are appropriate, having regard to the  
24 regional social, environmental and economic  
25 impact of the construction, operation, and  
26 abandonment of the proposed pipeline,"  
27 so that the impacts that are referred to are contemplated  
28 to be, and I think are restricted to impacts that  
29 derive from construction, operation, and abandonment  
30 of the proposed pipeline. Then the operative part of



1 the order-in-council under which you act:

2 "Therefore His Excellency, the Governor-General  
3 in council on the recommendation of the Minister,  
4 is pleased hereby, pursuant to paragraph 19(h)  
5 of the Territorial Lands Act, to designate the  
6 Commissioner to enquire into and report upon  
7 the terms and conditions that should be imposed  
8 in respect of any right-of-way that might be  
9 granted across Crown lands for the purpose of  
10 the proposed Mackenzie Valley Pipeline,"

11 and then a restriction,

12 "having regard to

13 (a)"

14 and here I emphasize that the words repeated are the  
15 words of the recital I've just read,

16 "(a) the social, environmental and economic  
17 impact regionally of the construction, operation  
18 and subsequent abandonment of the proposed pipe-  
19 line in the Yukon and the Northwest Territories,

20 (b) any proposals,"

21 and I emphasize the word "proposals"

22 "to meet the specific environmental and  
23 social concerns that set out in the expanded  
24 guidelines for northern pipelines as tabled  
25 in the House of Commons on June 28, 1972 by  
26 the Minister."



1 I have read again the  
2 expanded guidelines and in my respectful submission  
3 there is nothing in the expanded guidelines which  
4 will be met by a proposal founded on the evidence  
5 that Mr. Gibbs now intends to lead. I go further  
6 and say that not only is there no warrant in the  
7 order-in-council or in the guidelines for the intro-  
8 duction of this evidence is evidence that is properly  
9 led and is within the jurisdiction of the National  
10 Energy Board. Not only is that the proper forum but  
11 it is in fact the forum in which that evidence has  
12 already been led and that tribunal has already made  
13 a determination with respect to the very matter  
14 that you are being asked to hear and to pass upon.

15 I must say the witness, to  
16 his credit, in the prepared evidence, having recited  
17 his forecast of requirements for Canadian natural  
18 gas and his forecasts for natural gas supply, goes  
19 on to say that the National Energy Board heard evidence  
20 on these matters and that it has already made a  
21 report under the title "Canadian Natural Gas Supply  
22 and Requirements."

23 If my friend were to propose  
24 that that report should be filed before you as a  
25 public document, I don't anticipate that as a matter  
26 of completeness I would have any objection to it,  
27 but it seems to me that you're being asked to do  
28 two things. You are being asked first of all to  
29 hear evidence that is not relevant to the Inquiry in  
30 terms of its mandate even as expanded by reference



1 to the guidelines, you are being asked to hear evidence  
2 and therefore to pass upon a matter that has already  
3 been dealt with by the appropriate administrative  
4 tribunal, and in those circumstances it should not  
5 be heard.

6 Now, I hasten to add that  
7 if this evidence was called and would be subject  
8 to modest cross-examination and then the matter  
9 left, I don't think that I would propose to inter-  
10 vene. There are cases in which it is desirable  
11 to allow what may be technically irrevelant or  
12 even substantially irrelevant evidence to go in be-  
13 cause it is the shorter way around. Let's hear it  
14 and get through it and get on to something with  
15 which we are concerned.

16 The difficulty with this  
17 evidence is that if it is put before you for the  
18 purpose of passing upon, I know that you will be  
19 invited by other participants to hear evidence  
20 contra from persons who assert against the conclusion  
21 of the National Energy Board that there are other  
22 requirements for Canadian Natural gas less than those  
23 the Board has found to exist or that there is in  
24 existence natural gas supply more than the Board  
25 has already found in fact is available and I  
26 contemplate that if this evidence is admitted on the  
27 ground that it has something to do with the Inquiry  
28 and is admitted on the ground that the Inquiry  
29 will pass upon it in some fashion, we will have  
30 entered into essentially a new phase in which all



1 parties -- I shouldn't say all -- in which a number  
2 of participants, perhaps including Commission  
3 Counsel will be obliged to call evidence dealing  
4 with natural gas requirements and supply.

5 Now, in my respectful  
6 submission there is simply no warrant for that kind  
7 of exercise. I emphasize again that if it were a  
8 small matter, I would be inclined to let it go.  
9 It is not a small matter. It will lead us, I am  
10 afraid, and it should lead us if it is relevant,  
11 but it will undoubtedly lead us to two or three weeks  
12 of hearing on this issue alone, and in those circum-  
13 stances I ask the Commission to carefully gauge  
14 whether, bearing in mind the terms of reference now  
15 and the matters that are at stake in phase one, this  
16 evidence should in fact be heard, is my submission.

17 MR. GIBBS: Mr. Commissioner,  
18 before I reply, perhaps there are others of counsel  
19 who wish to join the seige.

20 MR. MARSHALL: Mr. Commissioner,  
21 I would like to speak in support of the position  
22 that has been so forcefully put by Commission  
23 Counsel, Mr. Scott.

24 Our understanding of the order  
25 in-council has been that you are not required to in-  
26 quire into and report upon this subject and accordingly  
27 we led no evidence pertaining to it. As we understand  
28 the referral of the Foothills application to the  
29 Inquiry, the objective was to deal with matters  
30 of significant difference and accordingly we do not



1 see a need for Foothills to lead evidence on this  
2 subject.

3 I might add sir, that when  
4 counsel met two nights ago to review among other things  
5 the proposed schedule which was discussed yesterday  
6 and which I might add, seems a very full one, we  
7 were generally stunned when we lined up opposite  
8 the dates reserved for formal hearings the various  
9 subjects still to be dealt with. It appeared to me  
10 at least that we might not get to Phase II until  
11 December and it is for that reason as well, sir, that  
12 I am concerned with an expansion of the Inquiry to  
13 include a consideration which as Mr. Scott has  
14 indicated may prove to be very lengthy, of the  
15 question of reserves and requirements for gas in  
16 Canada, bearing in mind as well that the National  
17 Energy Board is required to examine upon this issue  
18 in detail in deciding upon public convenience  
19 and necessity.

20 Thank you, sir.  
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1 MR. BELL: Mr. Commissioner,  
2 as you may recall at the Preliminary Hearings, I  
3 believe it was in Ottawa, we originally argued in  
4 favor of the inclusion of this evidence, and I may  
5 say I now take some comfort from the words of whoever  
6 it was that said that,

7 "Consistency is the hobgoblin of the small  
8 mind,"

9 which may provide a clue as to the line I am going to  
10 take.

11 We do view this evidence as  
12 being relevant, sir. If it could be shown that the  
13 reserves of Arctic Gas are inadequate to justify a  
14 pipeline at this time, or that Canadian demand was  
15 not as urgent as is contended by some, then it would  
16 be possible that we could demonstrate that a pipeline  
17 is not urgently needed and that this would provide  
18 time which is really what we are arguing for, time  
19 for a land claim settlement, and to the extent that  
20 we can garner some sympathy for the reasonableness of  
21 our position in demonstrating that, I would submit  
22 that this evidence is relevant.

23 At the same time, we have  
24 seen counter-arguments have gained some weight since  
25 that Preliminary Hearing, and as Mr. Scott said,  
26 this topic is a weighty one. Counsel will find it  
27 extremely interesting, they will want to cross-  
28 examine and call evidence, indeed other parties  
29 who are not interveners before this Inquiry today may  
30 wish to appear and give their evidence as well.



1 I dare say that cross-  
2 examination wouldn't stop with the adequate but  
3 brief, and I may say provocative summary of evidence  
4 submitted by the applicant, Foothills. It inevitably  
5 would extend to include an analysis of that applicant's  
6 filing before the National Energy Board, and I haven't  
7 read the entire application and I can't tell you how  
8 many pages are in it, but it weighs several pounds.

9 I think, sir, that it would  
10 consumed a good deal of time to get into this subject,  
11 and it may warrant a separate phase, with the result,  
12 sir, that there will be pressure to rush through  
13 other matters which are of more central relevance to  
14 this Inquiry to the task of determining what will be  
15 the impact on the Northwest Territories of the pipeline,  
16 and well just perhaps to finish off, should this evidence  
17 go in, we would request a postponement of its reception.  
18 As I said, it is a very weighty matter and it's a compli-  
19 cated one. We have proceeded on the assumption, perhaps  
20 falsely, that this matter would not be heard by this  
21 Inquiry and we are not prepared at this time to engage  
22 in the kind of cross-examination or to lead the kind of  
23 evidence that we would want to if it would go in.  
24 So consequently I would argue for a delay, if it were  
25 accepted.

26 In summary then we are of two  
27 minds, I would say. We see the relevance of this  
28 evidence, and we could live with it if it did go in.  
29 But we do not wish to see more important matters given  
30 less than their full consideration through time constraints.



1 That concludes my submission.

2 MR. ANTHONY: Mr. Commissioner,  
3 for very different reasons the Canadian Arctic Resources  
4 Committee comes to somewhat the same general conclusion,  
5 though, as has been expressed by Mr. Bell on behalf of  
6 the Brotherhood, and I won't review that, merely to  
7 emphasize two matters that are significant from our  
8 point of view.

9 (1) The Canadian Arctic Resources Committee has viewed  
10 one of its functions <sup>as</sup> to monitor and advise other  
11 organizations who are, for financial and other reasons,  
12 unable to be present throughout this Inquiry, of the  
13 Inquiry's proceedings, and when these organizations,  
14 whether at meetings in the south or at formal hearings  
15 here, have something significant to say, to facilitate  
16 their attendance.

17 I am advised that if this  
18 material goes through there are a number of organizati-  
19 ons who have research and who have mobilized evidence  
20 for purposes of the National Energy Board, both the  
21 hearings that have taken place and those that are  
22 anticipated in the fall on this issue, and I'm advised  
23 that they would almost certainly wish to appear.

24 (2) We again perhaps wrongly interpreted the order-  
25 in-council and your preliminary rulings, and in fact  
26 the strong submissions of the pipeline companies that  
27 this evidence would not be put before the Inquiry  
28 and therefore we are neither prepared to cross-examine  
29 this panel on these issues at this time, nor are we  
30 prepared to lead evidence at the likely date when we



1 would have to lead this evidence.

2 Our position is that if the  
3 applicants are urging that this matter is in fact  
4 before you and are urging that you examine and rule on  
5 this question, and if you, sir, if Commission counsel  
6 are satisfied that this evidence is relevant, we  
7 would not object to it being presented. We would ask,  
8 however, that it not be presented at this time in order  
9 that we have time to adequately prepare not only for  
10 the cross-examination but for leading evidence on this  
11 important issue.

12 MISS LANE: As usual, Mr.  
13 Commissioner, I'm last, and I can be briefer than the  
14 other two. I support the two positions that have been  
15 previously stated. We're not prepared to argue this  
16 is not relevant evidence, but if it is ruled that  
17 it's relevant, we feel that it's something we weren't  
18 prepared to deal with at this time and would support  
19 a delay rather than having this matter dealt with at  
20 this time.

21 MR. GIBBS: I have sort of  
22 a lonely feeling at this moment, sir.

23 THE COMMISSIONER: Your lines  
24 are breaking down.

25 MR. GIBBS: Mr. Commissioner,  
26 let me first deal with the question of relevance raised  
27 by my friend, Mr. Scott. It starts rapidly to  
28 appear that in his view relevance is determined by  
29 time and geography because these matters have been  
30 dealt with already before this Inquiry. One of my



1 friend's own witnesses in overview gave an extemporan-  
2 eous account of why a pipeline wasn't necessary. I  
3 have not been at the community hearings but --

4 THE COMMISSIONER: Excuse me,  
5 who was that?

6 MR. GIBBS: A man called  
7 Jamieson.

8 MR. SCOTT: He should explain  
9 as I explained at the overview evidence, that Professor  
10 Jamieson, who was invited to give overview evidence on  
11 a specific topic and to submit a paper in advance so  
12 that it would comply with the rules, did so. The paper  
13 was approved, it covered no material referred to of  
14 this type. Professor Jamieson no doubt, mesmerized  
15 by the size of the audience and the presence of a micro-  
16 phone, however, when he concluded his prepared topic  
17 which we had authorized him to give, went on for some  
18 half to three-quarters of an hour on matters that we  
19 had never suggested that he deal with, and you will  
20 recall, Mr. Commissioner, at that time after Mr. Carter's  
21 objection to the proceeding, I expressed my embarrass-  
22 ment, not that Professor Jamieson's views aren't  
23 considered weighty ones in certain tribunals, but I  
24 expressed my embarrassm ent that by accident a matter  
25 that had been raised on which he was not authorized to  
26 comment.

27 MR. GIBBS: Nonetheless, sir  
28 that evidence is there from a witness, and it is  
29 uncontradicted at this stage.. As well, I am informed  
30 that at some of the community hearings there have been



1 evidence to the effect, or people have made statem ents  
2 to the effect, and they were treated, as I understand  
3 it, as evidence, that this pipeline is not necessary  
4 and those are uncontradicted; and in neither case has  
5 there been an opportunity to cross-examine those  
6 assertions.

7 THE COMMISSIONER: Well, I'll  
8 go further than that. We feel, Mr. Gibbs, at the  
9 community hearings some members of the public come  
10 forward and said, "It isn't necessary to build this,"  
11 and many others have said, "It is necessary."

12 But you know, it's really  
13 impossible at those community hearings to say to people  
14 who wish to get those thoughts off their chest, to  
15 give them a short or long lecture on the order-in-coun-  
16 cil, the expanded guidelines, the National Energy  
17 Board, and so forth. It's really not possible under  
18 the circumstances to tell the people, " No, you  
19 can't go into this and you can't go into that." You  
20 go to those community hearings to -- the tribunal  
21 itself has to determine as it goes along which submis-  
22 sions made by members of the communities are relevant  
23 and no one has objected to those matters going in,  
24 but I wouldn't hold any of the parties to their  
25 failure to object either way in the community hearings.

26 If you were right, it would  
27 mean that the Indian Brotherhood, not having objected  
28 to these statements, that the pipeline is absolutely  
vital and in the interest of everyone and aught to be  
30 built immediately, and the Inquiry, as some have



1 suggested, ought to be wound up at once so that the  
2 pipeline can be built, it would mean that the Brother-  
3 hood must be taken to have acquiesced to that  
4 evidence given at community hearings.

5 But Mr. Bell hasn't objected,  
6 because -- and neither has Mr. Hollingworth on the  
7 other side -- because we proceeded in that rather in-  
8 formal way.

9 However, you carry on.

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1 MR. GIBBS: I wasn't intending,  
2 sir, to criticise that approach, but the point I was  
3 making is that these kinds of statements are in  
4 the transcript, they are evidence, the weight that is  
5 given to them of course is up to you as Commissioner  
6 and one then has to assess whether to leave those  
7 uncontradicted or take the other step available  
8 to <sup>an</sup> applicant and that is to lead evidence in the  
9 formal Inquiry to meet those assertions and of course  
10 the Indian Brotherhood has exactly the same right  
11 in these to meet assertions that are made by the  
12 Applicant to lead that kind of evidence, and that  
13 is one of the reasons why this evidence was tendered.

14 The second one, sir, is that  
15 the urgency or otherwise of a pipeline connection  
16 could well lead to a condition, in my submission,  
17 recommended by you as to timing, and there have  
18 been -- you have been urged to consider timing and  
19 my friend, Mr. Bell, just mentioned one of the  
20 reasons, the Indian land claims, so that it appeared  
21 to me to be relevant on that question.

22 Thirdly, and probably the  
23 most serious reason for its relevance is this: that  
24 is the design and planned buildup of the pipeline. That  
25 has clearly been considered a matter for this Inquiry  
26 to look into. Arctic Gas led panels on this matter.  
27 One of the basic questions on design and buildup  
28 is why that design and why that buildup and you  
29 will recall, sir, that I tried to ascertain from  
30 Arctic Gas witnesses, what required a billion



1 cubic feet a day or whatever the number is in  
2 the first year of connection, because it has always  
3 been my submission that that must relate to a  
4 market requirement.

5 Now, subsequently in the  
6 Foothills evidence, people giving evidence on these  
7 matters will say this throughput, this design, this  
8 buildup, this timing was based upon the advice given  
9 to us by our forecaster of market requirements, so  
10 there is a direct link with things that have already  
11 been heard about the market gas and which I am  
12 certain will be heard from Foothills. It is a  
13 part of the narrative of the pipeline construction.

14 My friends refer to the  
15 fact that the National Energy Board, and so does  
16 my witness in his prepared evidence, have issued  
17 a report. But I remind you, sir, that not everyone  
18 accepts that report as gospel, including associates  
19 of some of my friends back here, who deny that the  
20 conclusions are correct, and insofar as this Board  
21 is concerned, in my submission, or this Commission,  
22 in my submission, it does not have to accept that  
23 report as the final word. It accepts it as a report  
24 that was made by the National Energy Board after a  
25 lengthy hearing.

26 THE COMMISSIONER: But more  
27 than that, it's by the people whom Parliament has  
28 said are to consider those matters and they have  
29 been established under statute passed by the Parliament  
30 of Canada and given the job of doing that. That's



1 -- it's not just a report by some people who just  
2 happened to get together and decide to put a report  
3 out.

4 MR. GIBBS: Oh, no, sir,  
5 but in my submission, you are not bound to accept  
6 the conclusions in that report effective last  
7 February as the last word on what the supply and  
8 requirements in Canada are, and I am not asking  
9 you to enter into a long Inquiry into what they  
10 are. I am asking and putting forward this evidence  
11 as the beginning of the pipeline construction and  
12 design and so on to show why these things were done  
13 the way they were.

14 The arguments that this will  
15 lead to counter evidence, in my submission are not  
16 things that ought to weigh with you because there  
17 should be no restriction on relative evidence as a  
18 matter of timing.

19 THE COMMISSIONER: Those  
20 are arguments addressed to expediency and I won't  
21 consider them.

22 MR. GIBBS: It has been  
23 said, sir, that there is nothing in the order-in-  
24 council which opens this door or enables you to  
25 hear this evidence, but the order-in-council doesn't  
26 circumscribe the evidence, sir. The order-in-council  
27 defines what you are ultimately to do, but if one  
28 were to look at only the order-in-council to see  
29 what evidence is relevant, a great deal of what has  
30 gone in long before Foothills was made an applicant



1 would be ruled out. For example, what in the order-  
2 in-council deals with the voting in the Gas Arctic  
3 Study Group which was first brought in by Mr. Horte.  
4 YOU, and I think properly, have taken the view that  
5 you must look at it overall in order to understand  
6 what the project is all about, including the back-  
7 ground to it. In my submission you must also look  
8 at this small bit of evidence in order to determine  
9 why these things that flow from it do flow, and  
10 in my submission it is wrong to say that by bringing  
11 this evidence you are called upon to rule on the  
12 natural gas requirements in Canada. What you are  
13 called upon to do is define in the order-in-council.

14 Now, sir, having said all  
15 of that I am going to say that I am not making  
16 a huge point of insisting this evidence go in. It  
17 seemed to me sensible, the proper place to put it  
18 as part of the Foothills narrative. The fact that  
19 Arctic Gas has not put it in really has no bearing ,  
20 it may leave a hole in their case. It may be that  
21 I will say at some time that they have not demonstrated  
22 the feasibility of their design because they are  
23 not showing any market which they must meet.

24 Those, sir, are my sub-  
25 missions.

26 MR. SCOTT: Just one or two  
27 observations. I assume from the fact that the  
28 evidence is being tendered, that you are being asked  
29 to pass upon it, it wouldn't be justifiable on  
30 any other basis, and when you are being asked to



1 pass upon it, you're being asked to determine in  
2 essence, the requirements for Canadian natural gas  
3 in the future and the supply of natural gas in the  
4 future. Now, I make no argument from expediency when  
5 I refer to the fact that this will lead us into a  
6 long hearing. I simply raise that matter to justify,  
7 if you will, the fact that there has been irrelevant  
8 evidence received in the past to which I have not  
9 objected. In the past. Yesterday, before my  
10 cross-examination, I recall that Mr. Gibbs and  
11 Mr. Goldie spent a substantial amount of time  
12 trying to determine whether Foothills had been fair  
13 in signing its membership in the study group and then  
14 backing away from it. Now, that's all very interesting  
15 no doubt in a matter of historical interest, but has  
16 no relevance, whatever, as far as I can see to this  
17 Inquiry. No objection was taken to it because I think  
18 it was thought at least when the exercise commenced  
19 that it would not take very long. It would be  
20 easier to go through it than to resist it. I resist  
21 this for the opposite reason.

22 If this is equally irrelevant  
23 and was to take three minutes, I'd say, well, let's  
24 have it and be done with it. We can strike  
25 it from our minds when we come to decide the issues,  
26 but the reason I refer to the fact that the National  
27 Energy Board spent thirty to forty days and made a  
28 decisive report on this issue is that this is not  
29 a tag end which can be dealt with quickly. If admitted  
30 it will lead to a substantial body of evidence from a



1 number of parties. It seems to me the real issue  
2 here can be summarized this way: is there anything  
3 in the order-in-council, or the expanded guidelines  
4 which authorizes or requires you to pass on a matter  
5 that is within the jurisdiction of the National  
6 Energy Board and I think exclusive jurisdiction of the  
7 National Energy Board, a tribunal established by  
8 Parliament to deal with, among other things, precisely  
9 this matter, and in my respectful submission there  
10 is not.

11 THE COMMISSIONER: Mr.

12 Gibbs relies on three things -- the community hearings,  
13 although he has not really pressed that. The other  
14 two matters though, he says, relate to the timing  
15 of the pipeline and the design and planned buildup.  
16 And as I understand MR. Gibbs, he isn't asking me to  
17 take it upon myself to determine what Canada's  
18 gas requirements are in a definitive sense, in the  
19 sense that whatever I said would be substituted for  
20 whatever the National Energy Board had said.  
21 He is saying, look, you have to pay some attention  
22 to these matters to determine whether this build up --  
23 let's take his third argument -- that Arctic Gas  
24 has scheduled, which is something like 3 billion --  
25 I have forgotten now -- 3 billion in the second year --  
26 3 billion cubic feet a day in the second year  
27 -- I may have that wrong -- whether that buildup  
28 with the impact it would have in terms of construction  
29 schedules and so forth is necessary. That is Mr.  
30 Gibbs' argument really. He says that a consideration



1 of Canadian gas requirements is the foundation upon  
2 which to determine questions related to timing, design  
3 and planned buildup. That's really -- I hope that I am  
4 being fair to him, the substance of his case.  
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2 That's about  
3 it, isn't it? Am I being fair?

4 MR. GIBBS: Yes sir, but not  
5 as to the Canadian Arctic Gas design capacity and  
6 buildup, but as Foothills.

7 THE COMMISSIONER : All right,  
8 but by implication it's the other side of the coin,  
9 yes.

10 MR. SCOTT: Can I make two  
11 observations?

12 THE COMMISSIONER: Yes.

13 MR. SCOTT: In the first place,  
14 each of the applicants in their applications have  
15 set forth timetables -- I'm not as familiar with Foot-  
16 hills as I am with Arctic Gas's, but they have said  
17 when they intend to commence, if all regulatory approv-  
18 als are given, when they intend to commence the  
19 construction of the pipeline, and their timetable for  
20 construction. In my respectful submission, there is  
21 nothing that authorizes the Inquiry to amend those  
22 applications to stipulate commencement on a later  
23 date. Those are their applications and the  
24 Commission's function is to determine whether terms  
25 or conditions should be imposed on them.

26 For example, if Arctic Gas  
27 says they want to begin to build in 1977, if you were  
28 to decide, sir, that they probably weren't going to  
29 begin to build until 1980, and said so, it would be  
30 a kind of meaningless observation if in fact they  
did commence to build in 1977. So insofar as the



1 evidence is led to invite you to amend the application,  
2 in my respectful submission it simply can't be done.

3 The second thing is this,  
4 Mr. Bell's client will no doubt urge, as he's indicated,  
5 that a term or condition should be imposed that no  
6 construction should commence until a given time. Now  
7 in my respectful submission it is within your terms of  
8 reference or may be within your terms of reference to  
9 impose that as a condition on the basis of the evidence  
10 that is led by Mr. Bell and others that indicates for  
11 social or other reasons a delay is desirable. But  
12 respectfully, it is not within your jurisdiction to  
13 weigh the desirability of that condition on the evidence  
14 that you've heard as against the interest of the public  
15 that is determined by the existence of adequate  
16 reserves to meet the predicted demand. That is a  
17 political function.

18 THE COMMISSIONER: You say  
19 that's for the people who govern the country, with  
20 my report before them and N.E.B.'s report before them.

21 MR. SCOTT: Precisely, sir.

22 THE COMMISSIONER: Well, I'd  
23 like to consider this. Have you any other evidence  
24 you can proceed with?

25 MR. GIBBS: I have another  
26 panel here, sir.

27 THE COMMISSIONER : Well, let  
28 me consider this and I'll advise you when we begin  
29 this afternoon, or in the morning, of my views, and in  
30 the meantime if you could go ahead with another panel?



1 MR. GIBBS: Very well, sir.

2 THE COMMISSIONER: Our apologies  
3 to Mr. Mackie.

4 MR. GIBBS: He's been sitting  
5 patiently these many days. One more day, I think, will  
6 be all right.

7 Mr. Commissioner, we have some  
8 maps that we want to put up before this panel starts  
9 giving evidence, if we could have a few minutes to do  
10 that.

11 THE COMMISSIONER: We'll take  
12 an adjournment for a few minutes then.

13 MR. GIBBS: Thank you.

14 (PROCEEDINGS ADJOURNED FOR FEW MINUTES)

15 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

16 MR. MARSHALL: Mr. Commissioner,  
17 while we're waiting for the panel, I've indicated to  
18 Mr. Gibbs there were a couple of undertakings that  
19 I could deal with. Perhaps it would be appropriate  
20 to do that now.

21 Mr. Goldie indicated that we  
22 would file a copy of the Joint Research & Feasibility  
23 Study Agreement dated June 1, 1972. I have a copy for  
24 filing. I have a couple of additional copies, not  
25 sufficient to pass out to all, but if any counsel or  
26 others wish to get a copy, I'm sure we can have one  
27 run off.

28 Also, sir, I think during  
29 Mr. Horte's cross-examination he was asked for  
30 information as to the expenditure that had been made



1 on the Nortran program, training program that's been  
2 referred to at various times, both by Arctic Gas and  
3 Foothills. The information given to me, sir, is that  
4 the total cost of the training program from 1970 in  
5 its inception to June of 1975 has been \$966,689. The  
6 administration costs that Arctic Gas has borne from  
7 the period July '73 to June '75 are additional to  
8 that, sir, they are \$582,000. The total therefore is  
9 \$1,548,689.

10 THE COMMISSIONER: Thanks very  
11 much.

12 (JOINT RESEARCH & FEASIBILITY STUDY AGREEMENT  
13 DATED JUNE 1, 1972 MARKED EXHIBIT 222)

14 MR. SCOTT: Just to fill  
15 in the record, the other day you asked me to advise  
16 the Inquiry the material that the Minister had sent  
17 with his letter referring to Foothills. I neglected  
18 to observe that he sent either at that time or very  
19 shortly after copies of two reports that he had received  
20 from Foothills, one, the first which I think is referred  
21 to in the prepared evidence for today, is a report  
22 by Klohn Leonoff, K-L-O-H-N L-E-O-N-O-F-F  
23 Consultants Ltd., entitled:

24 "Application of slope stability analysis to  
25 design,"  
26 dated May 30, 1975 and prepared for Foothills Pipe Lines  
27 Ltd., and a second report of Unies Ltd., U-N-I-E-S  
28 Ltd. on

29 "Scour in the east channel of the Mackenzie  
30 River below Tununuk Point,"



1 T-U-N-U-N-U-K, dated February, 1975. We have asked  
2 Mr. Ellwood of Foothills if he can provide us with  
3 additional copies of these reports so that they can  
4 be circulated. We don't have them at hand now. If  
5 anybody wishes to inspect them they will be available  
6 at our office.

7 I should also say that con-  
8 sistent with our arrangement with the Department of  
9 the Environment, we have received an additional number  
10 of recently prepared studies that relate to matters that  
11 may be of interest to those who are participants in  
12 this Inquiry. The studies are available at our office.  
13 We hope to have a list of them prepared, a list of the  
14 additions prepared fairly shortly to be circulated to  
15 the participants.

16 THE COMMISSIONER: Yes, you're  
17 undertaking to prepare such a list and circulate it,  
18 are you?

19 MR. SCOTT: I'm undertaking  
20 on behalf of persons unknown at the moment to do that.

21 I was going to say I would  
22 speak to Mr. Waddell about it, but I will see to it  
23 that the list is prepared.

24 MR. MARSHALL: I'm sorry,  
25 Mr. Scott, it just wasn't clear to me. This was a list  
26 of reports from the government?

27 MR. SCOTT: Under our arrange-  
28 ment with the Department of the Environment, they under-  
29 took to let us have a list of copies of all reports  
30 and studies that they had had, that touched the issues



1 in this Inquiry. They did that some months ago and  
2 copies of all those documents have been available for  
3 some months at our office.

4 MR. MARSHALL: Right.

5 MR. SCOTT: They don't stop  
6 work, and in the intervening months they have had some  
7 more material. That has arrived at the office and a  
8 list will be prepared of it and circulated to the  
9 participants.

10 MR. MARSHALL: Fine, sir.  
11 The Kohn Leonoff and the Unies studies, are those  
12 Foothills?

13 MR. SCOTT: Those apparently  
14 were reports that were forwarded to the Department of  
15 Indian Affairs & Northern Development by Foothills,  
16 either at the time or shortly after their application  
17 and which the Minister forwarded on to the Inquiry  
18 with his letter of referral.

19 MR. MARSHALL: Well, we are  
20 anxious to have copies of each of those reports from  
21 Mr. Gibbs, sir. We'd be happy to receive them.

22 MR. GIBBS: Perhaps this is  
23 the appropriate time, through you, sir, to ask Mr.  
24 Scott to see that requests for these kind of reports  
25 come to either Mr. Hollingworth or me. If they go to  
26 Mr. Ellwood they get delayed because ultimately there  
27 may be questions of privilege or something else that  
28 has to be dealt with, and they can be produced much  
29 more quickly if they come from counsel to counsel,  
30 In fact, I think we have some copies of the Kohn



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Leonoff Report here. I'll find out over the noon period.

Mr. Commissioner, the next  
panel, the third panel, entitled:

"Location of the Pipeline"

consists of Mr. Mirosh, manager of engineering, Foothills  
Pipe Lines Ltd., ; Mr. Fawcett, supervisor of surveying,  
Foothills Pipe Lines Ltd.; Mr. Bouckhout, supervisor  
of environmental affairs, Foothills Pipe Lines Ltd.;  
Mr. Gillespie, engineer, Klohn Leonoff Consultants Ltd.;  
Mr. Drew, Jr., geologist, Sproule Associates Ltd.  
Perhaps that panel could now take the stand and be  
sworn?

E.A. MIROSH,  
M.A. FAWCETT,  
LEO BOUCKHOUT,  
K. GILLESPIE,  
C.W. DREW, JR., sworn:

DIRECT EXAMINATION BY MR. GIBBS:



Drew, Fawcett, Mirosh,  
Bouckhout, Gillespie  
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1  
2 MR. GIBBS: MR. Commissioner,  
3 to introduce the panel, from my left -- starting at  
4 my left is Mr. Drew, then Mr. Fawcett, Mr. Mirosh,  
5 who will act as Chairman of the panel, Mr. Bouckhout,  
6 and Mr. Gillespie.

7 Q Mr. Mirosh, you are  
8 manager of engineering for Foothills PipeLines Ltd.

9 WITNESS MIROSH:

10 A Yes.

11 Q And does the sheet  
12 attached to your prepared evidence and having your  
13 name at the top accurately describe your academic  
14 qualifications and experience?

15 A Yes.

16 Q Would you read that into  
17 the record, please.

18 A I received a Bachelor  
19 of Engineering Degree in Electrical Engineering,  
20 1960 from the University of Manitoba and a Masters  
21 Degree in Electrical Engineering, 1966 from the  
22 Univeristy of Alberta.

23 During the period 1960 to  
24 '62 I was employed by the City of Winnipeg Hydro as  
25 an engineer. 1962 to 1964 by the Taylor Instrument  
26 Company as a sales and service engineer. From the  
27 period 1964 to 1966 while I was doing graduate work  
28 I was employed as a lab instructor at the Univeristy  
29 of Alberta.

30 Beginning in 1966 through to  
31 1973 I was with the Alberta Gas Trunk Line, starting



1 originally as a project engineer on station design  
2 and construction, later into operations as controls  
3 maintenance supervisor and still later supervising  
4 engineer and automation beginning in 1973,

5 Into 1974 I was manager  
6 of Algas Engineering  
7 Services Ltd., a subsidiary of Alberta Gas Trunk Line  
8 and from late 1974 until now as engineering manager  
9 of Foothills Pipe Lines.

10 Q Perhaps you could just  
11 briefly describe what the business pursuits and activi-  
12 ties of Algas Engineering are?

13 A Yes, Algas Engineering  
14 was created to offer both consulting engineering  
15 and training to the pipeline industry, to the natural  
16 gas pipeline industry basically, both in this country  
17 and abroad and in this respect, although we didn't  
18 undertake a great many significant projects, we were  
19 involved in training offshore personnel from various  
20 companies in Canada and in undertaking some consulting  
21 work of a pipeline nature in Canada.

22 Q Mr. Mirosh, would you  
23 please describe Foothills route location studies in  
24 the early stages of its application preparation.

25 A In late 1974 Foothills  
26 was formed and began to accumulate staff. The  
27 route information and material we had came from the  
28 Alberta Gas Trunk Line which had assisted in its  
29 preparation and development while a member of the  
30 study groups. Our very first studies therefore



Drew, Fawcett, Mirosh  
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1 concentrated on the alignment sheets based upon  
2 study group material and published and submitted by  
3 CAGPL as part of its application to build a pipeline.  
4 As might be expected we agreed with the corridor which  
5 the route was taking and also supported the routing  
6 on the east side of the Mackenzie River to avoid the  
7 more numerous major river crossings on the west side.

8 As to a general layout  
9 of a Foothills pipeline, we knew that our starting  
10 point would be at the Taglu gas plant on Richards  
11 Island and that a lateral would be run from the mainline  
12 to the Parsons Lake gas plant. At the south end,  
13 the Foothills pipeline was to terminate at the 60th  
14 parallel and to connect with both the Westcoast and  
15 the AGTL Canada systems. We therefore were to aim  
16 this termination at a point which would be close  
17 to the common border point of the Northwest Territories,  
18 British Columbia and Alberta.

19 In summary, therefore, we  
20 determined that the Foothills pipeline would begin  
21 at the Taglu gas plant and move in a straight a line as  
22 feasible along the east side of the Mackenzie River to  
23 the termination point near the junction of Alberta,  
24 B.C. and the Northwest Territories.

25 In order to help us with our  
26 studies, we obtained aerial photography from the  
27 government of Canada covering the route and engaged in  
28 our own stereoscopic studies to refine this route as  
29 much as we could without being in the field. During  
30 these studies we found that there were  
31 areas where we would depart from the study group route



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
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1 due to several factors. For example, in the area  
2 around and north of Travaillant Lake, we found  
3 that we were able to save several miles of route since  
4 we were not concerned with bringing Alaskan gas into join  
5 with the main line. The CAGPL route deviates to the  
6 west in this area to accomodate the Alaskan lateral.

7 Another area where we  
8 felt a major departure would take place was the route  
9 south of the Willowlake River. CAGPL was proposing  
10 to cross both the Liard and the Mackenzie Rivers.  
11 We were aware of general concern for these crossings  
12 by the Department of Indian and Northern Affairs  
13 and as our studies show that a good crossing could  
14 be obtained south of Fort Simpson on the Mackenzie  
15 River, we therefore chose to route our pipeline  
16 to the east to avoid crossing both the Liard and  
17 the Mackenzie Rivers.

18 In summary then, we were in  
19 general agreement with the study group routing  
20 in the central 400 miles in the Northwest Territories  
21 and on the other hand proposed route changes in both  
22 the northern 200 and the southern 200 miles of the  
23 Territories.

24 In carrying out these studies  
25 we engaged consultants in the areas of terrain typing,  
26 geotechnical engineering, and environmental assessment  
27 and planning. These consultants, together with our  
28 staff, helped to not only roughly define the route  
29 as I have described it to this point, but in addition  
30 carried on with further studies which are still ongoing



1 to more specifically refine the route.

2 For example, although we made  
3 use of all the study group drill information which  
4 applied to our routing, we last year engaged our consul-  
5 tants to carry out a drilling program in the southern  
6 100 miles of our route, mainly that area south of Fort  
7 Simpson.

8 This summer we carried out  
9 joint reconnaissance programs in which our engineers  
10 as well as our geotechnical consultants, our terrain  
11 typing consultants and our environmental consultants  
12 formed a multi-disciplinary team in the field. These  
13 field studies have, of course, refined the route further  
14 but no major deviations such as the ones I have  
15 described have been found to date.

16 Our concern with routing  
17 led us to many discussions with the Department of  
18 Public Works with respect to how the pipeline route  
19 which we were proposing would interface with the  
20 proposed Mackenzie Highway. During these many meetings  
21 between our engineers and those of the Department of  
22 Public Works, I believe that we came to an understanding  
23 with the Department that the Foothills pipeline  
24 and the highway could both be accommodated  
25 satisfactorily along the route.

26 Q Can you explain more  
27 specifically the major route departures from that  
28 developed by the study group?  
29  
30



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Gillespie, Drew  
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1  
2 A The first  
3 major route departure is that Foothills does not propose  
4 any delta to Prudhoe Bay connection, and I could point  
5 that out on the map. This point shows the CAGPL prime  
6 route connecting with the prime route in Canada, and  
7 we do not propose the Alaska lateral connection. Of  
8 course this map is laid on its side, this being the  
9 north end and the far side being the south end. The  
10 Alaskan lateral connects in the CAGSL case with their  
11 mainline route at this point just to the west of  
12 Travaillant Lake.

13 Now in our case we do not  
14 propose a lateral, so that's our first major difference.

15 The second major difference is  
16 that we do not propose to deviate to the west to pick  
17 up this lateral, as the CAGPL prime route does, and  
18 therefore in our case we find that we can route in a  
19 straight line across that terrain, relatively straight  
20 line.

21 THE COMMISSIONER: Where is  
22 Arctic Gas? Is that just to the left off--

23 A It would be off the map.  
24 Turning back to my text, the second major departure  
25 is that in the area around and north of Travaillant  
26 Lake, which I pointed out on the map. Here we found  
27 that about 20 miles of pipeline could be eliminated  
28 where the study group line deviated to connect with  
29 the Alaskan lateral. The deviation which serves no  
30 Canadian purpose. This saving in 20 miles of route



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1  
2 amounts to between 2 and 3% of the total pipeline route  
3 in the Northwest Territories. In carrying out this  
4 modification we ensured that we stayed at least five  
5 miles away from the shore line of Travaillant Lake  
6 on the east side. We did this upon the advice of our  
7 environmental consultants who suggested that sensitive  
8 areas on the Travaillant Lake area as well as trapping  
9 areas to the south, and denning areas to the Thunder  
10 River crossing should be avoided. Doing this meant  
11 that we would cross the Thunder River about four miles  
12 upstream of the study group crossing.

13 The third area of major route  
14 departure is that area around Fort Simpson. Here we  
15 also believed it necessary to accept a slight lengthen-  
16 ing of our pipeline so as to skirt the Ebbutt Hills  
17 summit and the trapping areas south of the Mackenzie  
18 River; and if I may I'd like to refer to the map again.  
19 The area I'm referring to is this area here beginning  
20 at just beyond the river between two mountains into  
21 Fort Simpson where in our routing we have taken  
22 the position to be to the west of the Ebbutt Hills  
23 summit.

24 We were advised by our  
25 consultants that a crossing of the Ebbutt Hills plateau  
26 should be avoided, as it is generally known that this  
27 area is a proposed international biological program  
28 site and thus could hold special interest for  
29 environmental scientists. We selected a route around  
30 the south-west edge of the hills where we were able to



Mirosh, Fawcett, Bouckhout,  
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1 stay at least 750 vertical feet from the summit plateau.  
2  
3 Doing this added approximately 1 1/2 miles of length to  
4 our pipeline.

5 Q Can you describe, Mr.  
6 Mirosh, how routing studies were carried out for the  
7 community laterals which Foothills proposes to con-  
8 struct to bring gas to various communities along the  
9 Mackenzie Valley around the Great Slave Lake?

10 A Insofar as the routing  
11 for community laterals was concerned, we had no prece-  
12 dence routing to follow, since the study group had not  
13 considered running pipelines to communities. Therefore  
14 for those communities along the Mackenzie Valley we  
15 obtained new aerial photography, and as a result of  
16 office studies, as well as inter-action with our  
17 geotechnical and environmental consultants, we establish-  
18 ed the best routing then ascertainable, between the  
19 mainline and the various communities which we propose  
20 to service with gas. Field work which we are carrying  
21 out this season with a multi-disciplinary team of  
22 consultants will enable us to confirm and adjust  
23 these routes to suit field conditions. The pipeline  
24 route concerning communities around the Great Slave  
25 Lake area was also initially determined during office  
26 studies of available mapping and aerial photography.  
27 Field work which is being undertaken this season will  
28 confirm and refine the routes which were determined  
29 in the office.

30 Once again, a multi-disciplinary



Mirosh, Fawcett, Bouckhout  
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1 team  
/will be working in these areas.

2 Q And the map to your  
3 extreme left is the one which shows those community  
4 laterals for the Great Slave Lake area?

5 A That's correct.

6 Q Mr. Fawcett, you are  
7 supervisor of surveying for Foothills Pipe Lines Ltd.?

8 WITNESS FAWCETT: Yes.

9 Q And<sup>does</sup> the sheet attached  
10 to your prepared evidence and having your name at the  
11 top describe your academic qualifications and experience?

12 A Yes.

13 Q Would you read it into  
14 the record, please?

15 A In 1949 I completed the  
16 third year in the faculty of architecture at the Univer-  
17 sity of Manitoba. I received my commission as a Manitoba  
18 land surveyor in 1952, and as an Ontario land surveyor  
19 in 1958. I pursued legal land surveying in both the  
20 Provinces of Manitoba and Ontario from 1949 to 1963,  
21 during which I was associated with several pipeline,  
22 transmission line, and highway location, and legal  
23 surveys.

24 Between 1963 and 1967 I  
25 was mainly involved in survey office supervision and  
26 management. In this position I was held responsible  
27 for the preparation and processing of numerous surveys  
28 related to rights-of-way.

29 In February 1967 I was retained  
30 by Teshmont Consultants to fill the position of survey



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1 manager. My duties included involvement in the route  
2 location and management of all construction surveys on  
3 the 555-mile Nelson River High Voltage direct current  
4 transmission line project. The routing of the  
5 transmission line extended from the discontinuous perma-  
6 frost zones of Northern Manitoba to the City of  
7 Winnipeg.

8  
9 Between 1970 and 1974 I have  
10 been involved almost continuously, both in the field and  
11 in the office, on studies related to this Mackenzie  
12 Valley Gas Pipeline project. This included separate  
13 terms of employment with Templeton Engineering of  
14 Winnipeg, one of the parent firms of Teshmont Consul-  
15 tants, and Northern Engineering of Calgary, the engineer-  
16 ing consultants for CAGPL.

17 In October of 1974 I was  
18 employed by Foothills Pipelines Ltd. of Calgary as  
19 supervisor of surveys. My initial input with Foothills  
20 has been involvement on a team of route locators respon-  
21 sible for the proposed gas pipeline location. My  
22 responsibilities as such have been co-ordinating and  
23 assembling material leading to the preparation of  
24 Foothills alignment sheet book, designated Section "H"  
25 in our application.

26 Q And, sir, those alignment  
27 sheets have been marked as exhibits.

28 Mr. Fawcett, can you describe  
29 a brief description of the criteria taken into account  
30 in the selection of the Foothills route?

A In general, the criteria



Mirosh, Fawcett, Bouckhout,  
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1 established in the location of Foothills' route would  
2 be applicable in most parts to the location of other  
3 transportation systems rights-of-way in the Northwest  
4 Territories. Briefly, these are:

5 (1) Restrictive terrain features, such as mountain  
6 ranges, lakes, and potential river crossings. The  
7 first two can quite easily be identified on existing  
8 maps. But river crossings may require considerable  
9 office and field verification studies prior to their  
10 selection.

11 (2) Considerations given to environmentally sensitive  
12 terrain.

13 (3) Considerations given to wildlife including fish,  
14 birds, and mammals.

15 (4) A knowledge of soil characteristics

16 (5) Access to the proposed route both for construction  
17 and operations and maintenance from existing transpor-  
18 tation systems and supply centres

19 (6) Considerations given to whether to route fairly  
20 closely to communities for serviceability or a  
21 greater distance for socio-economic impact reasons.

22 (7) A thorough knowledge of permafrost and the  
23 geotechnical constraints it places on a proposed loca-  
24 tion.

25 (8) The shortest possible route between the pipeline's  
26 originating and terminating points governed by those  
27 considerations mentioned above.

28 Q Would you now please  
29 describe the successive steps followed in the Foothills



Mirosh, Fawcett, Bouckhout,  
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route selection?

A It was soon apparent to our initial appraisal studies that a corridor from the Taglu and Parson Lake fields to the Alberta border should have a major re-routing with the most northerly and southerly 200 miles of the study group pipeline route.

We generally accepted the central 400 mile segment of route we had become familiar with when AGTL was an active member in the CAGPL consortium. Mr Mirosh has earlier described the two major changes in location, the 200 miles between the Taglu meter station and a point just south of the Thunder River and the southerly 200 miles lying between the Willowlake River and the Alberta border.



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1 TO aid Foothills personnel  
2 in defining the proposed pipeline corridor in the  
3 two revised segments, government topographic maps  
4 at a horizontal scale of four miles to the inch  
5 were obtained. These, together with the Arctic Lands  
6 Use Series maps, supplemented with other related  
7 published material were used in conjunction with  
8 geological survey maps to select a preliminary  
9 route.

10 With all factors being equal,  
11 the most economical pipeline route is the shortest  
12 distance between its originating and terminating  
13 stations as pointed out earlier. There are invariably,  
14 however, a number of constraints placed upon the locator  
15 which govern the selection of the line between them.  
16 These were discussed in the criteria description and,  
17 when defined, act as controlled points in route  
18 selection.

19 With the aid of the maps  
20 and consultations between the engineering,  
21 environmental, and geotechnical members, these control  
22 points were determined. As straight a route as possible  
23 was then established between them on the maps. To con-  
24 firm the corridor selection an overview flight in a  
25 fixed-wing aircraft provided a visual field inspec-  
26 tion.

27 Q What was the next step  
28 taken in the route selection process?

29 A To further appreciate  
30 the studies, additional government topographic maps,



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1 this time at a horizontal scale of one mile to  
2 the inch, were purchased. A more definitive examination  
3 of the terrain features and slope contouring was thereby  
4 afforded.

5 Subsequent to this stage of  
6 Foothill's route selection, available high level  
7 photography at a horizontal scale of one mile to the  
8 inch was purchased from the National Air Photo Library  
9 in Ottawa. A coverage of approximately 15 to 20 miles  
10 centered on the pre-selected map route, was obtained  
11 for the total mainline route revisions, plus the  
12 central 400 miles. Stereoscopic (three dimensional)  
13 studies were then initiated to define a narrow three-  
14 mile wide corridor on the existing photography  
15 through which the pipeline would pass.

16 Q And how was that  
17 accomplished?

18 A This was done with the  
19 aid of an instrument known as a stereoscope which allows  
20 for a three-dimensional visual study of the photo-  
21 graphs. An assessment of the surficial terrain assists  
22 in the selection of the best route. This is known as  
23 photo interpretation.

24 Narrowing the route corridor  
25 to approximately three miles permitted Foothills to  
26 secure the services of a photogrammetric contractor  
27 to prepare a series of photomosaic windows. These  
28 are constructed by fitting together a number of  
29 individual photographs to form a long, narrow  
30 mosaic. The prepared mosaic was then enlarged to an



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1 appropriate scale, in our case to a horizontal  
2 scale of 2000 feet to the inch and then sized to  
3 set the space afforded it in the alignment sheet.

4 At this point all efforts had  
5 been concentrated on attempting to define the  
6 narrow corridor through which the pipe would pass.  
7 Further information was, however, required which would  
8 give us a physical description of the terrain  
9 contained within the photomosaic window. The  
10 delineation of the various types would enable  
11 us to choose a specific route location which would avoid  
12 or traverse certain areas the engineering and geo-  
13 technical members of the panel wished to consider in  
14 their site studies. Sproule Associates of Calgary  
15 were retained by Foothills for this phase of the  
16 pipeline location. Mr. W. Drew will later explain the  
17 involvement in the project and provide an expert  
18 description of the terrain typing application.

19 The provision of terrain typing  
20 along the selected corridor assisted us in determining  
21 a specific route within it. A geotechnical review  
22 was carried out by Klohn Leonoff Consultants and an  
23 environmental assessment was undertaken by our consul-  
24 tants, Lombard North. The reviews led to minor route  
25 adjustments which were incorporated into the final  
26 selection illustrated on the alignment sheets forming  
27 part of Section H-1 of the application. Mr. K.  
28 Gillespie of Klohn Leonoff will later expand upon  
29 their involvement in the route location.

Q You described the steps



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1 taken in establishing a pipeline route for the  
2 two major revised sections of the mainline route  
3 described by Mr. Mirosh. Were any further examinations  
4 of the central 400 miles carried out?

5 A As indicated earlier, AGTL  
6 was an active member of the study group consortium  
7 at the time this segment of the line was selected,  
8 and did, in general, accept it as a feasible route.  
9 Foothills did, however, contract Sproule Associates to  
10 also terrain type the prepared photomosaics on the  
11 alignment sheets within that section for uniform  
12 route appraisal.

13 Q Then not only the  
14 northern and southern 200-mile segments, but the  
15 total mainline route was investigated?

16 A That is correct.

17 Q What steps were taken in  
18 the route selection initiated for the approximately  
19 450 miles of community service lines proposed in the  
20 application?

21 A An identical approach  
22 to the mainline selection was applied towards a  
23 community service line routing. There was however a  
24 great deal more information made accessible to us  
25 from a number of field studies carried out along the  
26 Mackenzie River Valley these past five or six years  
27 and the reports resulting from them. It is Foothills'  
28 intention, however, to carry out field verification  
29 programs for this area and in fact we have scheduled  
30 some for the upcoming months.



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1 Q In the route selection  
2 fo the revised sections of the line, and in the  
3 review of the central 400 miles, are you aware of any  
4 particular segment where it may appear difficult to  
5 accommodate other transportation facility rights-  
6 of-way, such as a highway, transmission line, or oil  
7 pipeline within a reasonable corridor?

8 A As MR. Mirosh indicated,  
9 a number of meetings were held with the Department of  
10 Public Works in Edmonton to discuss route compatibility.  
11 A few confilcts between the two proposed routes were  
12 solved and it appears at present the two could be  
13 accomodated quite satisfactorily in any given area.

14 We are not, at the moment,  
15 aware of the routes any other facilities would  
16 assume, but it certainly appears that there should be  
17 no severe restrictions in their locations. Only at  
18 two specific sites, one at Little Chicago and the  
19 other at Gibson Gap, is the corridor restricted  
20 somewhat in width. The narrowest of the two,  
21 Little Chicago is apparently 600 feet wide, and  
22 Gibson Gap roughly 1000 feet.

23 Q I thought you said 600  
24 feet, you meant 800?

25 A It is 800 feet wide.

26 Q Can you describe to  
27 what extent you were involved in the location of  
28 compressor stations along the pipeline route?

29 A Once the total route had  
30 been selected, a portion of my responsiblitiy was



1 to determine the length of the line and obtain a  
2 centre line profile to enable hydraulic studies to  
3 be carried out. This was to determine the  
4 optimum spacing and the location of each compressor  
5 station.

6 Q What did you do when the  
7 location at each station was provided you?

8 A Similar to the preliminary  
9 pipeline location studies, each station location  
10 was reviewed by our geotechnical, environmental,  
11 and engineering consultants to assess its location  
12 merits.

13 Q Were the locations of  
14 any compressor stations changed because of these  
15 reviews?

16 A Yes, two stations in  
17 particular, compressor stations number 6 and 14 were  
18 moved for the following reasons:

19 (1) The original location for station number 6  
20 fell within one mile of the community of Fort Good  
21 Hope. A request to relocate was accepted and  
22 the new site located 6 miles south of the town.

23 (2) The original location for compressor station number  
24 14 fell approximately 7 miles north of the Mackenzie  
25 River in the vicinity of Fort Simpson. The isolation  
26 of the location resulted in additional costs for  
27 operation and maintenance, and a request to move  
28 to the south side of the Mackenzie River for access-  
29 ability was made. This was approved.

30 Q Did the two station



1 movements result in the movement of any other stations?

2 A Yes, when the line with the  
3 two station changes, a new hydraulic study was made and  
4 new locations for the total 17 compressor  
5 stations were provided. Again, we initiated a  
6 combined review of the sites by the geotechnical  
7 environmental, and engineering departments.

8 Q And did any further  
9 changes result in these reviews?

10 A Only minor changes caused  
11 by specific site locations falling in undesirable  
12 terrain features were requested, and these were  
13 approved by the hydraulic department. Such  
14 changes did not exceed 1/2 mile .

15 Q Were you involved in  
16 the location of wharf sites stockpile sites and  
17 access roads?

18 A Yes.

19 Q Can you describe your  
20 involvement?

21 A The general location  
22 of these sites were supplied to me by Foothills'  
23 construction and operations and maintenance  
24 departments. IT was part of my responsibility to  
25 prepare site location alignment sheets which,  
26 when treated as was the mainline location study  
27 aided in selecting feasible sites. Additional  
28 maps such as hydrographic maps were used in selecting  
29 the wharfsites. This information plus documented  
30 material supplied to us by the Department of Public



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1 Works in Edmonton, assisted us in the preliminary  
2 selections.

3 Specific locations of these  
4 ancillary facility sites, and the interconnecting  
5 access road routings were again reviewed by our  
6 geotechnical, environmental and engineering depart-  
7 ments. Any changes in location were assessed by the  
8 combined group, and the changes incorporated into the  
9 alignment sheets in Section 8 of the application.

10 At present, Foothills has  
11 a field group physically inspecting and surveying  
12 these locations for site specific information. Minor  
13 movements are to be expected as a result of these  
14 investigations.

15 Q Can you briefly indicate  
16 what steps are contemplated which will lead to the  
17 final route selection of both the mainline and  
18 community service pipelines and also compressor  
19 station and ancillary facility site locations?

20 A At present Foothills  
21 has field programs underway that will define the  
22 following by the end of this summer:

23 (a) the specific crossing sites of all rivers and  
24 streams located along the proposed pipeline route;  
25 and (b) site specific location of all ancillary  
26 facility sites.

27 The completion of these  
28 programs will lead to the development of new controlled  
29 mosaics and the provision of adequate contouring to  
30 assist us in the engineering and geotechnical



1 designs. New photography for the full route has  
2 been recently flown and will be used in the construc-  
3 tion of new controlled mosaics to commence October  
4 1 of this year. Low level photography of all river  
5 crossings will provide mosaics at a horizontal scale  
6 of 200 feet to the inch. Small interval contouring  
7 will facilitate final river crossing designs to be  
8 completed during the upcoming winter.

9                                 Route refinement studies  
10 will be completed this winter utilizing the control  
11 mosaics, and on-site verification field programs.  
12 It is anticipated continued environmental input  
13 will be received as the field investigations are carried  
14 out.

15                                 The final route location will  
16 be verified upon completion of concentrated drilling  
17 at suspected unstable and sensitive terrain sites.  
18 This is expected to take place during the centre  
19 line location surveys scheduled to be initiated just  
20 prior to construction. Final compressor station  
21 sites will be surveyed and drilling for foundation  
22 and geotechnical designs initiated at this same  
23 time.

24                                 Q     Have you any further  
25 comments to make regarding pipeline location?

26                                 A     No, I do not.  
27  
28  
29  
30



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Q Mr. Bouckhout, you are  
supervisor of environmental affairs for Foothills Pipe  
Lines Ltd.?

WITNESS BOUCKHOUT:

A Yes.

Q Does the sheet attached  
to the prepared evidence and having your name at the  
top accurately describe your academic qualifications  
and experience?

A Yes.

Q Would you read that, please?

A I received a Bachelor's  
degree in biology from the University of Windsor in  
1968, a Master's degree, a Master of science degree  
in ecology at the University of Calgary in 1972, and  
am presently enrolled in a Master's of Management Studies  
program at the University of Calgary.

THE COMMISSIONER: Excuse me.

Master of what?

A Master of management  
studies.

THE COMMISSIONER: Management  
studies.

A It's a business program. During  
the period of 1965 to 1970 I spent three summers as a  
naturalist in Parks Canada, Department of Indian &  
Northern Affairs; one summer conducting general wild-  
life inventory for the Canadian Wildlife Service of the  
Department of the Environment, and one summer as a  
field assistant with the International Biological Program.



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1 During the period of 1971 to  
2 1973, I conducted contract work for the Canadian Wildlife  
3 Service and for the Northwest Territories Game Manage-  
4 ment Division on wildlife habitat relationships. Also  
5 contract work for the Canada Centre for Remote Sensing  
6 of the Department of Energy, Mines & Resources dealing  
7 with remote sensing via satellite.

8 THE COMMISSIONER: I'm sorry,  
9 do you mind my stopping you there? What does that  
10 mean? Centre for Remote Sensing.

11 A The Canada Centre for  
12 Remote Sensing is an agency of Energy, Mines & Resources  
13 and remote sensing essentially is gaining data without  
14 being on-site, in other words by photography or satellite  
15 coverage, so on and so forth.

16 Q Data about terrain or  
17 about wildlife, or everything?

18 A Primarily, as I'm speaking  
19 of it here, it's data on terrain and vegetation  
20 patterns and so on. This particular program was  
21 involved with the ERTS Satellite program which is  
22 a satellite which is presently orbiting  
23 approximately 600 miles above the earth and is contin-  
24 ually recording data on the surface below, in various  
25 wave-length bands.

26 Q Thanks.

27 A During the period of  
28 May '73 to April '75 I was employed as senior biologist  
29 and project manager with the Lombard North Group Limited  
30 an environmental planning firm. Here I acted as



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1 project manager on an environmental impact study of  
2 the Mackenzie Highway, among others.

3 From April 1975 to the present  
4 I have been supervisor of environmental affairs for  
5 Foothills Pipe Lines.

6 Q Mr. Bouckhout, would  
7 you describe your responsibilities as supervisor of  
8 environmental affairs?

9 A I am responsible for  
10 environmental matters dealing with the pipeline project.  
11 This includes engaging various environmental consultants  
12 and co-ordinating their input into the project,  
13 providing liaison on environmental matters with  
14 various government agencies and other interested parties,  
15 and providing the environmental input into various  
16 project-related decisions, including route location.

17 Q Mr. Fawcett has explained  
18 how environmental considerations were taken into  
19 account when the Foothills route was being selected  
20 initially. Since that has already been done, is your  
21 environmental input into the route selection complete?

22 A No. The environmental  
23 input into the phase of route selection which Mr.  
24 Fawcett has described was based on information that  
25 was available at that time, and on the experience and  
26 judgment of those specialists who were involved. A  
27 great deal of information on the physical and biological  
28 components of the environment of the Mackenzie  
29 Valley area has been collected over the past five or  
30 six years. Although this information exists in varying



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1 levels of detail and site specificity, it was adequate  
2 to assess major environmental concerns and at that  
3 stage to evaluate the route in relation to those con-  
4 cerns. As a result of day to day discussions and  
5 formal meetings with others involved in the route  
6 selection process, a route was defined. The route  
7 which was selected served as a physical reference.  
8 At that point we moved into the second stage of our  
9 environmental studies, the phase in which we are now  
10 involved. We are currently conducting field studies  
11 along the entire pipeline route. This is being done  
12 through a multi-disciplinary program. In this way the  
13 route is being evaluated simultaneously from both the  
14 physical and biological points of view. As a result,  
15 conflicts between biological and physical interests  
16 with regard to the mainline route, community laterals,  
17 and facilities locations are being resolved on-site  
18 where possible.

19 Q Mr. Bouckhout, you  
20 mentioned your multi-disciplinary field program. Could  
21 you describe this procedure in a little more detail  
22 and explain how the results of this program affect  
23 route selection decisions?

24 A During the spring of this  
25 year we and our consultants determined the kind of  
26 information which we felt necessary to properly  
27 ground truth the route which was identified in the  
28 Foothills submission. Field programs were then  
29 developed to meet the immediate objectives of  
30 evaluating the identified route from the viewpoint of



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1 physical and biological sensitivity, and using this  
2 information to meet the ultimate objective of refining  
3 the route location. Since the integrity of the  
4 biological component of the environment is dependent  
5 upon the physical component, it was logical to assume  
6 that the individuals concerned with these two parts  
7 of the environment should work together. Thus if a  
8 site of particular biological sensitivity were found,  
9 which might warrant a route revision, the geotechnical  
10 experts would be on hand to consider feasible alterna-  
11 tives from the terrain suitability point of view. In  
12 a similar manner route alternatives dictated by unfor-  
13 eseen problems of terrain suitability for construction  
14 could be immediately evaluated by the biological team.  
15 This procedure has proven both efficient and effective.  
16 Evaluations are made in the field with both biological  
17 and physical disciplines involves rather than at a  
18 distant office at a much later date when immediate  
19 on-site inspection by either the biological or geo-  
20 technical team would not likely be possible.

21 Q In answer to an earlier  
22 question, you made reference to community laterals  
23 and facilities location. Would you please describe  
24 for us what these are and how they are reviewed?

25 A The community laterals  
26 are the small diameter lines running from the main  
27 trunk line to the town gates of those communities being  
28 serviced. These would include the lateral systems  
29 serving Hay River, Pine Point, and Yellowknife, among  
30 others. By the term "facilities", I mean those



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1 developments other than the pipeline itself which are  
2 part of the overall project. Included are borrow  
3 areas, access roads, wharves, stockpile areas, and  
4 meter stations. The review process for the facilities  
5 locations is very similar to that described for the  
6 mainline. All of these locations were assessed  
7 during preparation of Foothills' submission. Our  
8 current field program includes on-site evaluation of  
9 all facilities locations by the biological team, which  
10 again inter-acts with other disciplinary teams, when  
11 necessary. It should be noted that the exact location  
12 of facilities such as meter stations and access roads  
13 are dependent upon final alignment of the pipeline.  
14 We anticipate, however, that deviations from the  
15 presently proposed locations will be small. If sign-  
16 ificant alterations are necessary, the sites would be  
17 re-evaluated in the field.

18 Q Now Mr. Drew, what is  
19 your association with Foothills Pipelines Ltd.?

20 WITNESS DREW: I'm a geologi-  
21 cal associate of Sproule Associates Limited of  
22 Calgary, Alberta, and have been contracted to do the  
23 terrain typing and related geological studies of the  
24 Foothills Mackenzie routes, and am responsible for  
25 Sproule Associates input.

26 Q Does the sheet attached  
27 to the prepared evidence with your name at the top  
28 describe accurately your academic qualifications and  
29 experience?

30 A Yes.



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Q Would you read it in,  
please?

A Education: B.S. Geology,  
Yale University, New Haven, Connecticut, 1950.  
M.S. Geology, University of Wisconsin, Madison,  
Wisconsin, 1951.  
Experience: 1950, State of Oregon, Department of  
Geology & Mineral Industries, Grants Pass, Oregon,  
summer geology field assistant.  
1951-1952, U.S. Corps of Engineers, Pickstown, South  
Dakota, engineering geologist.  
1952-1954, Sinclair Oil & Gas Company, Billings,  
Montana, and Salt Lake City, Utah, field sub-surface  
and well-site geologist.  
1954, Petroleum Research Corporation, Denver, Colorado,  
temporary position as research geologist.  
1955-1962, Geophoto Services Inc. and Ltd., Denver,  
Colorado and Calgary, Alberta, photo-geologist.  
1963-1964, Hunting Survey Corporation Ltd, Calgary,  
Alberta, photogeological work, mainly on the Canadian  
Arctic Islands.  
1964 to present, Sproule Associates Limited (previously  
J.C. Sproule & Associates Ltd.), Calgary, Alberta.  
Photogeological and field work on the Canadian Arctic  
Islands, Mainland Arctic of the Northwest Territories  
and Yukon, North-eastern British Columbia, Northern  
Alberta, Quebec, Montana, Yoho National Park, and  
Greenland. Also photogeological work on Manitoba and  
Saskatchewan. Photo-interpretation and meteorological  
studies relating to airfield, pipeline, and other



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1 engineering sites in the Canadian Arctic and sub-Arctic.  
2 Terrain sensitivity mapping of the Canadian Arctic  
3 Islands and Mackenzie Valley, as well as national and  
4 provincial parks in Southwestern Canada.  
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Q Mr. Drew, what is your contribution to the Foothills Location Study?

A We, the geological consultants who do the terrain typing, were given three-mile wide corridors which had been pre-selected on topographic maps and our primary responsibility was the terrain typing of these corridors. In addition, going one step beyond the Canadian Arctic Gas presentation, an estimate of the terrain sensitivity of all the units was given. Subsequent to terrain typing, all of the terrain types must be described. Field verification has been and will be done by means of helicopter, foot and motor vehicle traverses.

I have prepared, and shall prepare, brief reports on terrain typing, terrain sensitivity, and descriptions of terrain types. I am also called upon to give advice related to the geological contributions.

Q What is terrain typing and how it is done?

A Terrain typing is the mapping of surficial geological units, terrain features, and modifiers. In other words, all of an area is divided by boundaries into surficial geological map units which show the subsoil or the foundation upon which the soil, vegetation, etc., rest. The term "surficial geological" applies most commonly to the somewhat looser material lying on top of the bedrock, but sometimes the bedrock itself is at



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1 or very near the surface and becomes the surficial  
2 geological unit. Terrain features, such as  
3 cliffs and eroding banks are also shown. Terrain  
4 types are further described by modifying features  
5 such as thermokarst depressions caused by the  
6 melting of ground ice. Different phases of the  
7 terrain type are also delineated. Examples of these  
8 would be a peat-covered phase or wave-modified phase  
9 showing remains and expressions of former  
10 lake beaches. Visible indications of excessive  
11 ground ice are also shown. These include ice-wedge  
12 polygons or patterned ground and beaded drainage, that  
13 is, large holes in small streams caused by the melting  
14 of masses of ground ice in fine material.

15 It should be added at this  
16 point that we are using the legend and terminology  
17 developed by Dr. Mollard of J.D. Mollard and  
18 Associates Ltd., Regina, Saskatchewan, rather than the  
19 legend that I have developed at Sproule Associates Lim-  
20 ited. This is because Mollard's well-established legend  
21 and terminology are familiar to the applicant and  
22 other consultants involved in the study.

23 Terrain typing is accomplished  
24 by study of available information, especially that made  
25 available by the Geological Survey of Canada, and then  
26 primarily by the stereoscopic examination of airphotos.  
27 Up to this point, we have used high-level photos  
28 flown at an altitude of 25,000 to 35,000 feet above  
29 the ground, which, with the 6-inch focal length,  
30 gives the scale of 1:50,000 to 1:70,000 or roughly



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1 approximately 1 inch to 1 mile. The amount  
2 of detail which can be seen on small scale airphotos  
3 or for that matter which can be shown on the limited  
4 space available on such photos is of course restricted.  
5 The photos are studied stereoscopically using  
6 a stereoscope to give a three-dimensional view of the  
7 ground such as would be obtained from a helicopter  
8 hovering over the area, except that vertical exaggeration  
9 is present. In other words, hills look  
10 higher and slopes look steeper than they actually are.

11 The information is then  
12 transferred by geological technicians from the air-  
13 photos to photomosaics made from these photographs,  
14 but enlarged. Finally the information is transferred  
15 from these photomosaics to the alignment sheets by  
16 draftspersons.

17 Of course, the photogeological  
18 mapping is only an interpretation (although, when done  
19 by well qualified and experienced interpreting  
20 geologists, it can be a very good interpretation)  
21 until it is checked in the field and verified by  
22 the geologist and also by the drilling done by  
23 the geotechnical consultants. This field verification  
24 will be dealt with more fully in a subsequent  
25 question.

26 After field verification  
27 the photogeological interpretation is revised and re-  
28 fined to give a more accurate picture of the terrain  
29 and subsoil.

30 Q What is terrain sensitivity



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1 and how is it determined?

2  
3 A Terrain sensitivity  
4 can be defined as the susceptibility of the  
5 ground to damage or alteration from the natural  
6 state as a result of external activity. The external  
7 activity can either be man's activity of trespassing  
8 upon, excavating from the terrain, etc., or  
9 natural activity, such as stream erosion, which can  
10 result indirectly from man's activities of  
11 disturbing upstream areas or removing vegetation.  
12 Terrain sensitivity is really the foundation for  
13 assessing environmental impact. The soils, the  
14 vegetation which grows upon the soils and the fauna  
15 which inhabit the area are all affected by what  
16 happens to the subsoil as a result of its sensitivity  
17 and the activities upon it.

18 An estimate of terrain  
19 sensitivity of each map unit under various conditions  
20 is made during the air photo interpretation. Since  
21 we have a good idea of the nature and material of  
22 each of the terrain types, features and phases, we  
23 can estimate how sensitive they will be under  
24 different conditions. This requires an understanding  
25 of how terrain sensitivity is related to physical  
26 properties. In general, sensitivity increases with  
27 the decrease in grain size of the material. Thus  
28 silts and clays are generally much more sensitive  
29 than sands and gravels. Loose material is generally  
30 more sensitive than well compacted material, especially  
31 on slopes.



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1 Topography is a very im-  
2 portant factor in terrain sensitivity. Sensitivity  
3 generally increases with the increase in slope.  
4 The local environment, including climate and drainage  
5 and the vegetation resulting from these factors  
6 is also important in determining the sensitivity of  
7 a given piece of land.

8 Permafrost is a major factor  
9 in terrain sensitivity. For example, the amount  
10 of ground ice and resulting greater sensitivity of  
11 a given terrain type generally increases from  
12 south to north in the Mackenzie corridor. Terrain  
13 sensitivity can be checked by observing what has  
14 happened where given terrain types have been  
15 disturbed, such observations being made both on  
16 the photos and in the field.

17 The assignment of terrain  
18 sensitivity ratings to the map units under various  
19 slope conditions depends considerably upon the  
20 experience and judgment of the observer. It is more  
21 subjective and less objective than terrain typing,  
22 since you are estimating what will happen rather than  
23 what is actually there.

24 Q How are terrain  
25 types described?

26 A Terrain types as  
27 well as features and pahses, are described initially  
28 by their appearance on the airphotos in conjunction  
29 with a study of available previous information.  
30 From the appearance on airphotos and other available



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1 information, a given area is mapped as a certain  
2 terrain type, feature, or phase. From a knowledge of  
3 geomorphology and recent geologic history, we have  
4 a reasonably accurate idea of what the composition  
5 of that map unit should be. For instance we know  
6 that moraine deposited directly by glacial ice is  
7 generally more compacted than the same materials  
8 such as alluvium and outwash, deposited by running  
9 water. We also know that materials deposited by  
10 faster flowing streams of steeper gradient tend to be  
11 coarser than those deposited by low gradient streams  
12 of slower current. Of course, the grain size of the  
13 deposited material depends upon the source material  
14 too.

15 Even though the inherited  
16 legend has only one label for bedrock, we try to  
17 identify the type of bedrock in our mind and for  
18 our descriptions. There are vast differences in the  
19 characteristics of shales and limestones, for instance.  
20 Even for a given bedrock type, such as sandstone, there  
21 is a considerable variation between consolidated  
22 sandstones that readily -- there is a typing error  
23 there. That should be between "poorly" consolidated  
24 sandstones that readily break down to loose sand and  
25 very hard sandstones that can be crushed only  
26 mechanically.

27 THE COMMISSIONER: Excuse  
28 me, where is the typing error, again?

29 A As typed it says  
30 "even for a given bedrock type such as sandstone there



1 is a considerable variation between consolidated  
2 sandstones." That should read, "between poorly  
3 consolidated sandstones."

4 THE COMMISSIONER: Between  
5 what?

6 A Between poorly consoli-  
7 dated sandstones.

8 THE COMMISSIONER: Oh,  
9 right, right.

10 A -- that readily  
11 break down into loose sands, and sands should be  
12 S.A.N.D.

13 MR. GIBBS: That is the  
14 usual spelling.

15 A To continue with my  
16 text: To describe the composition and  
17 structure of the map units more completely  
18 and also the amount of ground ice, we study  
19 exposures from the different units in the field  
20 and gain much additional information from the logs  
21 of the drill holes put down in the various units.  
22 From the compilation of all of this material, the  
23 units can be quite accurately described.

24 Q What is the purpose and  
25 necessity of field verification of terrain typing  
26 and terrain sensitivity?

27 A By field verification  
28 we mean going onto the ground and checking  
29 representative exposures of the different map units.  
30 The work done on the airphotos, no matter how  
experienced the interpreter, is still just



1 an interpretation, although it may be a quite  
2 accurate interpretation. It is not proved until  
3 it is examined on the ground, and the composition  
4 and structure are observed by looking at the  
5 and by feeling, and sometimes even tasting the material.  
6 By the structure observed in the field we mean such  
7 things as whether or not there is bedding or strati-  
8 fication and whether these different layers are hori-  
9 zontal or inclined, how well sorted the material is,  
10 etc. In other words, is it all nearly the same size,  
11 such as some lacustrine or glacial lake deposits,  
12 or is it a mixture of everything from clay to boulders  
13 such as is common in moraine. Composition is commonly  
14 broken down into categories of clay, silt, sand or  
15 gravel and boulders, or various kinds of bedrock, and  
16 occasionally some salts. We can often see exposures  
17 of direct evidence of ground ice in the  
18 field too. From the ground observations, an experienced  
19 surficial geologist can determine the depositional  
20 history of a given terraintype, feature, or phase,  
21 and thus identify it.

22 This field checking and close  
23 examination are also, of course, used to describe  
24 map units.



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1  
2 By obser-  
3 ving what happens when a given piece of terrain is  
4 walked on or dug into, or by looking at examples of  
5 past trespass on the terrain, we can refine our estimate  
6 of the terrain sensitivity. This personal field check-  
7 ing by the geologist, which is carried out by means of  
8 helicopter, foot, or motor vehicle traverses, is in  
9 addition to the ground truthing or checking by drilling  
10 by the geotechnical team. It is necessary to do both  
11 types of ground truthing, field checking by the geo-  
12 logist and drilling by the geotechnical team, in order  
13 to get an accurate picture of the terrain. The geolo-  
14 gist sees exposures considerably larger than that in  
15 the cores from small-diameter drill holes, and this  
16 enables him to get a broader picture and a more overall  
17 view of the structure of the material. On the other  
18 hand, the drill holes obtain information from the  
19 large areas where there are no exposures and where the  
20 geologist could not see the composition of the material  
21 without a great deal of digging. Of course, it is imp-  
22 ractical to actually examine every square yard or even  
23 every square mile of an area on the ground. What is  
24 done is to select representative localities within  
25 given terrain types or map units and then on the air  
26 photos, it can be observed where the similar types  
27 extend and thus map by analogy. In other words, if  
28 something has a certain appearance in that part of the  
29 country on the air photos and we have been to the  
30 field and verified just what that locality is, we can



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1 determine that the areas that have identical or very  
2 similar appearances on the air photos are of the same  
3 material. In the field the geologist and other  
4 specialists involved in the study have a chance to work  
5 together and exchange information. In addition, the  
6 geologist can take reconnaissance looks at possible  
7 alternate routes there.

8 Q Were the terrain typing  
9 and related studies worthwhile and useful in analyzing  
10 the Foothills Pipe Lines routes?

11 MR. MARSHALL: I sure hope the  
12 answer to that is "Yes".

13 A Yes, they were both  
14 worthwhile and necessary. Photogeology is the easiest  
15 and quickest form of mapping or terrain typing, other  
16 than merely compiling available printed information. A  
17 geologist can map many square miles per day in the  
18 office and since airphotos are taken in the summer, this  
19 work can be done at any time and in any weather. It  
20 takes just a few weeks, or at the most a couple of  
21 months, of field checking by only one or two geologists  
22 to verify and describe the terrain typing of the entire  
23 Mackenzie Valley corridor. In no other way is so much  
24 information obtained so easily. Even the most detailed  
25 published information on the open file maps  
26 of the Geological Survey of Canada, is aimed at a  
27 large area and is not detailed enough in our specific  
28 corridor to serve our purposes.

29 Terrain typing is useful to  
30 provide the foundation upon which decisions on the



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1 actual route method of construction, cost and environ-  
2 mental impact are made. Without the terrain typing, one  
3 would not know what material would actually be encoun-  
4 tered in the corridor, where to locate the drill holes,  
5 or just where within the corridor to actually locate  
6 the pipe and ancillary facilities.

7 MR. GIBBS:

8 Q What part of the routes  
9 did you and your colleagues terrain type and how do  
10 you differ from Canadian Arctic Gas Pipeline Limited?

11 A We terrain typed all  
12 of the routes including the mainline, short routes  
13 to wharf sites and settlements, and the long routes  
14 to Yellowknife and Pine Point. About half of our  
15 mainline route duplicates the Canadian Gas Arctic  
16 Pipeline route and about half is a new route. This map  
17 shows both the areas duplicating the CAGPL. corridor  
18 and the new corridors.

19 Start at the south end here,  
20 the black line is our route; the green line is the  
21 Canadian Gas Arctic route. We begin differing right  
22 here. They cross briefly and then they differ up  
23 to this point.

24 Q Can you identify those  
25 points a little better than by saying "Here" or  
26 "this point"?

27 A This is the Alberta  
28 border, we come up to Milepost 735 and there is no  
29 geographical feature close to that, that is about  
30 half-way up, two-thirds of the way up to Fort Simpson,  
31 and then the routes diverge and they cross briefly



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1 north of the Mackenzie River, and they take a different  
2 route crossing the Mackenzie River, and then the routes  
3 diverge again all the way up to, almost up to the  
4 river between two mountains, and then the routes are  
5 virtually identical in location until we get all the  
6 way up here. It's about Milepost 190, a little bit  
7 south of Thunder River, I believe, and then the Foot-  
8 hills route takes the more easterly position again,  
9 it is different from the CAGPL <sup>prime</sup> route but it goes  
10 along their cross delta alternate up past Noell Lake  
11 and then <sup>when</sup> we get up into the Mackenzie Valley itself the  
12 Foothills route differs again to the Taglu terminal  
13 point. Actually the line, the mileposts start  
14 at the opposite end from the way I described it.

15 Q All right, will you  
16 continue, please?

17 A Virtually all of our  
18 lateral corridors are in new territory, some not even  
19 covered by the Geological Survey of Canada open file  
20 maps. In the portion of the mainline duplicating the  
21 study group route, we had access to their interpreta-  
22 tion, although I understand it was not their latest  
23 revised interpretation. Still, because of our judgment,  
24 and also because of later information published by  
25 the Geological Survey of Canada, we at times disagreed  
26 with previous interpretations, although in general  
27 there was agreement.

28 Field checking has already  
29 shown that even in areas where we agreed with the  
30 previous interpretation, that interpretation was not



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1 always correct and has had to be revised on the basis  
2 of field observations. This is not intended to downgrade  
3 the excellent quality of the previous work, but rather  
4 to show the necessity for on-site inspection to finalize  
5 the understanding of the terrain involved.

6 Q What is the relationship  
7 between the geological and geotechnical studies on this  
8 project?

9 A The geotechnical consult-  
10 ants sometimes use our terrain typing in order to plan  
11 the location of the holes in their drilling program  
12 and other geotechnical studies. We, in turn, use the  
13 information obtained from their drilling program to  
14 refine our terrain typing and better describe our map  
15 units. Each study is partially dependent upon the  
16 other. The geological typing is a more reconnaissance  
17 type, faster and inexpensive tool providing the  
18 foundation for the more detailed and exacting geo-  
19 technical, soils, and engineering studies upon which  
20 final decisions are made. The geologist doing the  
21 terrain typing should indicate to the geotechnical staff,  
22 just where they want holes drilled to test the typing.  
23 The geotechnical consultants could then drill these  
24 specific holes or use existing information in addition  
25 to drilling other holes for their own purposes.  
26  
27  
28  
29  
30



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1 The geological study, including terrain typing and the  
2 estimation of terrain sensitivity, is aimed primarily  
3 at preliminary route location. The route location is  
4 refined by the geotechnical and other more detailed  
5 studies.

6 Q Mr. Gillespie, what is  
7 your association with Foothills Pipeline?

8 WITNESS GILLESPIE: I am an  
9 employee of Klohn Leonoff Consultants Ltd., our company  
10 was retained by Foothills Pipelines Ltd. in December,  
11 1974, to provide geotechnical assistance for the  
12 development of the proposed pipeline.

13 Q Does the sheet attached  
14 to the prepared evidence with your name at the top  
15 accurately describe your academic qualifications and  
16 experience?

17 A Yes.

18 Q Would you read it in,  
19 please?

20 A I received a Bachelor  
21 of Engineering in civil from Nova Scotia Technical  
22 College, Halifax, in 1950. In 1966 I received a  
23 Master's Civil at the University of Alberta in Edmon-  
24 ton. Between 1950 and 1959 I was an officer in the  
25 corps of Royal Canadian Engineers, Canadian Armed  
26 Forces. This military experience included surveys  
27 for mapping projects in the Middle East, Northern  
28 Ontario, and in the Northwest Territories, and super-  
29 vision of highway and bridge construction projects  
30 along the Alaska Highway in the Yukon Territory.



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1 From 1959 to '67 I was  
2 employed by the Federal Department of Public Works as a  
3 resident engineer in the Banff and Jasper National  
4 Parks. This work included supervision of various  
5 highway, bridge and asphalt paving contracts within  
6 the National Parks.

7 In 1967 and '68 I was resident  
8 soils engineers for the R.C. Thurber & Associates on  
9 construction control, sub-soil investigations and  
10 field instrumentation along approximately 100 miles  
11 of the railway.

12 Since 1968 I have been employed  
13 by Klohn Leonoff Consultants Ltd. I am senior executive  
14 engineer in the Calgary office and responsible for  
15 execution of major field studies in the Arctic and  
16 Western Canada. I have been involved in various  
17 northern projects since 1969. These have included  
18 reconnaissance for sections of a hot oil pipeline  
19 between Fort McPherson and the Alaska border for  
20 Canadian Bechtel; a gas pipeline between Prudhoe  
21 Bay to Fort Simpson along the west side of the  
22 Mackenzie River, also for Canadian Bechtel; a trans-  
23 portation corridor between Hay River and Tuktoyaktuk  
24 for Stanley Associates Engineering Ltd.; gravel  
25 inventories in the Mackenzie River Delta and Richards  
26 Island area for DIAND and Gulf Oil Canada Ltd.

27 In addition, I have parti-  
28 cipated in or directed major field drilling programs  
29 associated with the hot oil pipelines for Canadian  
30 Bechtel and Mackenzie Valley Pipeline Research Limited



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1 and for gravel inventiries carried out for DIAND and  
2 Gulf Oil Canada Ltd.

3 Q Would you please indicate  
4 what geotechnical studies have been done to date which  
5 affected the route selection of the Foothills PipeLine?  
6

7 THE COMMISSIONER: Excuse  
8 me, Mr. Gillespie, at the bottom of the first page  
9 of your curriculum vitae you say in the last line:

10 "Along approximately 100 miles of the railway."  
11 I missed something. What railway is that?

12 A Oh, the Alberta Resources  
13 Railroad, which extends from Hinton, Alberta to  
14 Pine Point.  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30



1 THE COMMISSIONER: That is  
2 Great Slave Railway?

3 A That is Great Slave,  
4 that is right.

5 MR. GIBBS: Would you  
6 read the answer then to question 48?

7 A The items which affected  
8 our geotechnical evaluation of the route included:

- 9 1. Our past experience on other northern projects;  
10 2. A review of the available topographic and  
11 geological maps, air photography, terrain typing and  
12 relevant test hole data obtained by the Mackenzie  
13 Valley Pipeline Research, Canadian Arctic Gas Study  
14 Group, and the Department of Public Works.  
15 3. Several aerial reconnaissances of the proposed  
16 Foothills Pipe Lines Ltd. route;  
17 4. Field programs to obtain data for review of  
18 specific problems relevant to the  
19 Foothills Pipe Lines route. These included such  
20 items as slope stability, erosion and drainage and  
21 terrain verification.

22 Q Would you please elaborate  
23 on that part of your company's past experience which  
24 is relevant to the Foothills Pipe Lines Ltd. route  
25 location.

26 A We have been involved  
27 in investigations for Arctic pipelines since 1969 when  
28 the first field work was done for a large diameter oil  
29 pipeline in Canada. In 1969 we were employed by  
30 Canadian Bechtel Ltd. who were studying a route for  
31



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1 a hot oil pipeline which would extend from Prudhoe  
2 Bay in Alaska across the North Slope and up the  
3 mackenzie Valley to the Albert/Northwest Territories  
4 border. Test holes were drilled at an average  
5 spacing of of one to two miles from  
6 Fort MacPherson to the Alaska-Yukon border and at a  
7 spacing of five to ten miles from Fort MacPherson  
8 across the Peel Plateau to a point south of Fort  
9 Good Hope and then along the east side of the  
10 Mackenzie River to the Alberta-Northwest Territories  
11 border. The testholes that were drilled along  
12 the east side of the Mackenzie River generally follow  
13 between zero and five miles what is now the Foothills  
14 pipeline corridor. Below Fort Simpson the 1969  
15 drilling varies between zero and ten miles from the  
16 Foothills pipeline corridor. After the testhole  
17 program was completed, airphoto interpretation was  
18 carried out by J.C. Sproule and Associates as  
19 a first attempt at classifying the terrain along  
20 the route.

21  
22 In 1970 we carried out a  
23 second major drilling program to verify terrain  
24 typing relative to a hot oil pipeoine. Our  
25 client was MVPLR. This program was a joint effort between  
26 the hot oil and the chilled gas company groups in as  
27 much as the airphoto interpretation was carried out  
28 by J.D. Mollard who was engaged by the gas group.  
29 We supervised the test hole drilling program and  
30 made the detailed ground checks. The investigation  
31 which extended from Prudhoe Bay through Alaska and into



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1 the Yukon to Fort McPherson, Northwest Territories  
2 is now known as the Interior Route. From Fort  
3 McPherson the route crosses the Peel Plateau to  
4 the Mackenzie River along the same route followed  
5 in the 1969 program. From this point south test  
6 drilling and observations were made on both the  
7 east and the west sides of the Mackenzie River to  
8 Fort Simpson. South of Fort Simpson to the Alberta-  
9 Northwest Territories border the same route was  
10 followed in the 1969 program.

11 The detailed ground checks  
12 made during this program included observation on  
13 slope stability, soil exposures, drainage and erosion  
14 and degradation of permafrost along seismic lines and  
15 at the edges of ponds and lakes.

16 In 1972 our company assisted  
17 the MVPLR group in further investigations for a hot  
18 oil pipeline route. The test hole drilling program  
19 extended from Norman Wells in a northwest direction,  
20 past Travaillant Lake as far as Campbell Lake and  
21 then north to Tuktoyaktuk. It followed the CNT  
22 line for the entire drilling program and as such  
23 was within five to ten miles of the Foothills corridor.

24 We have carried out other  
25 studies which gave us knowledge for assessing the  
26 northern 90 miles of the Foothills pipeline route.  
27 This was a Granular Materials Inventory for the  
28 Department of Indian Affairs and Northern Development,  
29 and included a helicopter reconnaissance, terrain  
30 typing of potential gravel sources, and a test hole



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1 drilling program in the source areas. The study area  
2 was bounded on the west by the Richardson Mountains, and  
3 on the south and east by a line extending through  
4 Fort McPherson, Arctic Red River, Sitidgi Lake and  
5 Eskimo Lakes. Thus the area included in the Mackenzie  
6 River Delta, Richards Island, and the Tuktoyaktuk  
7 peninsula.

8 Q Would you please outline  
9 the steps you followed in your initial review of the  
10 Foothills route?

11 A Our initial review  
12 consisted of an office study of the route. This was  
13 done using alignment sheets on which a tentative  
14 route had been drawn by Mr. Fawcett of Foothills  
15 Pipe Line Ltd. By using stereo airphotos,  
16 1:50,000 scale topographic maps, terrain typing  
17 and other relevant test hole data obtained by  
18 ourselves and by others, the alignment of the  
19 route was reviewed from the geotechnical viewpoint.  
20 Revisions in the alignment were suggested where it  
21 was felt anyone of the following items could be  
22 obtained.

- 23 1. less sensitive terrain, that is, lower ice  
24 content and stronger soils when thawed;  
25 2. less steep slopes, that is, along, or perpendicular  
26 to the pipeline;  
27 3. better river crossings, that is, crossings, with  
28 the lowest most stable banks and with no evidence of  
29 river bank erosion;  
30 4. minimal potential for drainage disruption and



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1 erosion, that is, to locate the pipeline to intercept  
2 drainage in defined areas and eliminate cross slope  
3 alignments where possible;

4 5. more stable ground, that is, to locate the  
5 pipeline away from any area which is presently unstable.  
6 or could become unstable.

7 The revisions to the  
8 original pipeline route carried out in the office  
9 varied between 1/4 mile and 15 miles in length and  
10 involved lateral shifts up to 1 1/2 miles. As an  
11 example of one of the many revisions made in the  
12 route during this office study, is illustrated by  
13 this alignment sheet. This mosaic shows a revision  
14 between mile 689 and mile 712 which involves a lateral  
15 shift of approximately 1 1/2 miles. This revision  
16 avoids steep sided gullies into the Mackenzie River  
17 and is generally located in less sensitive terrain.

18 I have a couple of maps  
19 here and I will show them to you and illustrate the  
20 locations that were made.

21 MR. GIBBS: Could the screen  
22 be moved around a little so that it is diagonal in  
23 the corner.

24 A This big map illustrates  
25 a relocation which was made in the office between  
26 mile 698 and over to mile 712. This is just  
27 south of Fort Simpson, between Fort Simpson and  
28 the Mackenzie Highway crossing. The location that  
29 was determined in the office ran along this line here,  
30 the upper line. Now, in the office when we looked at



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1 the airphotographs and the terrain types, we decided  
2 that a better location could be obtained by shifting  
3 the line to this location. This line is a little  
4 less sensitive terrain and it avoided some  
5 steep gullies which came in from the Mackenzie River.

6 Q I guess you could put  
7 it down now.

8 Would you now provide more  
9 details of change in the pipeline route which have  
10 been made by aerial reconnaissances conducted by  
11 your company.

12 A The first reconnaissance  
13 of the pipeline route was conducted in January 1975  
14 between the Alberta-Northwest Territories border and  
15 Mile 0 on the Mackenzie River Delta. The pipeline  
16 route and the major crossings were closely checked  
17 and some revisions were made. Along the pipeline  
18 route, the more important revisions made were:

- 19 1. In the north and south approaches to Willowlake  
20 River the route was revised to avoid steep cross  
21 slopes.  
22 2. In the Wrigley area the route was moved closer to  
23 the base of the McConnell Range to avoid numerous  
24 steep-sided gullies.

25 At the major rivers some  
26 changes in the crossing were made because better  
27 crossings were easily recognized from the helicopter.  
28 One example of a major crossing that was relocated  
29 was over the Mackenzie River near Fort Simpson. By  
30 moving this crossing downstream approximately 2,000



1 feet, very steep banks on the north side of the  
2 river were avoided. This alignment sheet shows  
3 the crossing as originally proposed compared to the  
4 crossing which now appears on the Foothills pipeline  
5 alignment sheets.

6 This map illustrates the crossing  
7 at the Mackenzie River just upstream from the Fort  
8 Simpson. This is the line that we checked originally.  
9 This is the line established from the office  
10 airphoto interpretation and location and this is  
11 the line we moved the line here because of very  
12 steep banks in this location. We put them in this  
13 location, the banks are much less steep and it  
14 is a much better location. By the way, the scale  
15 of these maps is one inch to 1000 feet.

16 THE COMMISSIONER: What is  
17 the distance of the old crossing -- from the old  
18 crossing -- to the new?

19 A Approximately 2000  
20 feet, sir.

21 Other major river crossings such  
22 as at Smith Creek, Ochre, Steep, Blackwater and Great  
23 Bear Rivers could not be closely inspected due to  
24 the heavy snow cover and lack of access. It was  
25 decided that additional inspections and surveys  
26 would be undertaken at these crossings in the spring  
27 of 1975.

28 The second reconnaissance  
29 was conducted in May and June of this year between  
30 Fort Simpson and Mile 0. For the major river crossings



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1 our assesement was that a detailed ground inspection  
2 was of prime importance to the selection of the  
3 crossing. This inspection included measurements  
4 of slopes, observations regarding drainage, river  
5 erosion and soil exposures as well as our assessment  
6 of the stability of the slopes. As a result of  
7 this reconnaissance minor revisions at some of  
8 the major river crossings are now being considered.  
9 The reasons for the revisions include such factors  
10 as less steep slopes, less erosion at the toe  
11 of the slope and the location of more stable slopes.

12 The next alignment sheet illus-  
13 trates the change in the location of the crossing  
14 which is now being considered at the Great Bear  
15 River.  
16  
17  
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1 This crossing is six or  
2 seven miles up-stream from the Community of Fort  
3 Norman, and this line is the alignment that's shown on the  
4 existing alignment sheets. We've inspected this  
5 crossing and because of some large slump block and  
6 very steep banks on the south approach, we have located  
7 an alternate crossing to the east, and that's shown  
8 by this line.

9 THE COMMISSIONER: Thank you.

10 A The reason for the  
11 revision to the Great Bear River crossing is that on  
12 the south bank the pipeline is located across a slump  
13 block of a large former landslide area, slopes are  
14 between 30 and 50%, and shallow downslope movements  
15 are evident in the steep slopes. Also at this crossing  
16 a major excavation would probably be required for  
17 construction of the pipeline. The upstream crossing  
18 presently under consideration has less steep slopes  
19 and excavations for the pipeline will be minimal.

20 Revision in the pipeline  
21 route is also being considered in some sections to  
22 avoid sensitive terrain, and provide less disruption  
23 to drainage. One example of a revision presently  
24 being considered is between Mile 347 and Mile 356.  
25 As shown on the air photo alignment sheets, the route  
26 proposed is located close to the base of the Norman  
27 Range, crossing the toes of talus slopes and inter-  
28 cepting springs coming out from the talus slopes.  
29 A re-location of the line about 2,000 feet west is  
30 being considered. The revision avoids the talus slopes



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1 and springs and is located in essentially the same  
2 terrain unit.

3 This display illustrates that  
4 the proposed revision between Mile 347 and 356, which  
5 is just a few miles north of Norman Wells, the line  
6 here along the base of the mountain is what is shown  
7 on the existing terrain sheet. The red line shows  
8 the location we are investigating now as a possible  
9 revision. The river in the middle is Oscar Creek

10 MR. GIBBS :

11 Q I'm not sure it's clear on  
12 the record. Milepost 0 is at the north end of the pipe-  
13 line.

14 A That's correct.

15 THE COMMISSIONER: Do you use  
16 the same milepost -- no, you wouldn't, would you --  
17 as Arctic Gas? Well, you both go from north to south,  
18 at any rate.

19 A That's correct.

20 MR. GIBBS: Q Would you  
21 please outline the field programs your company has  
22 conducted or is conducting relative to location of the  
23 Foothills route?

24 A In addition to the  
25 January and May reconnaissance, our company has  
26 conducted or is conducting the following programs  
27 for Foothills Pipe Lines Ltd.:

28 1. A winter drilling program was carried out in  
29 February and March, 1975, between Mile 685 and 785.  
30 This included drilling on the north and south slopes and  
31 in the river bed of the Mackenzie River, in the vicinity



Mirosh, Fawcett, Bouckhout,  
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In Chief

1 of the compressor stations, and in the different  
2 terrain types. About 150 test holes were drilled  
3 and sampled. This program determined soil and  
4 permafrost conditions at the Mackenzie River crossing  
5 and confirmed that a stable crossing could be made at  
6 this location. Also the range in soil and permafrost  
7 conditions was determined in the different terrain  
8 units in this section of the Foothills Pipe Lines  
9 route.

10 2. A drilling program is presently under way along  
11 the pipeline route. Test holes are being drilled  
12 to determine soil and permafrost conditions at the maj-  
13 or river crossings, in some landslide areas adjacent  
14 to the pipeline and in selected drainage areas. This  
15 data will be used to confirm the locations of the  
16 major river crossings, to assist in the assessment in  
17 the landslides which could affect the pipeline route  
18 and to provide soils data in selected drainage areas.

19 3. A reconnaissance of the proposed community  
20 servicing to Yellowknife, Hay River, and Pine Point  
21 will also be carried out this summer or early fall.  
22 The purpose of this reconnaissance will be to provide  
23 the first check on the route selected for the air  
24 photographs and topographic maps.

25 MR. GIBBS: Mr. Commissioner,  
26 the maps referred to by Mr. Gillespie were not  
27 prepared in time to photograph. We proposed to photo-  
28 graph them and reduce them to an appropriate size  
29 and tender them as exhibits later in the hearing.

30 All right, this panel now, sir,



Mirosh, Fawcett, Bouckhout,  
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1 is available for cross-examination.

2 THE COMMISSIONER: Might that  
3 large map be marked as an exhibit too?

4 MR. GIBBS: Yes, sir.

5 (MAP OF FOOTHILLS PRIME ROUTE MARKED EXHIBIT 223)

6 (MAP OF COMMUNITY SERVICING MARKED EXHIBIT 224)

7 MR. GIBBS: The Great Slave  
8 Lake community corridors is separate.

9 THE COMMISSIONER: Yes.

10 MR. SCOTT: I take it that  
11 they will be on loan to the display room, will they,  
12 is that the idea?

13 MR. GIBBS: Well, sir, we  
14 intend to have them on the wall whenever we have  
15 witnesses on here to the end of Phase 1.

16 If Miss  
17 Hutchinson, the custodian of exhibits, permits us to  
18 do so.

19 THE COMMISSIONER: Well, maybe  
20 the big one shouldn't be marked. I don't know how  
21 the INquiry would handle that. We'll leave that to  
22 Miss Hutchinson to decide. We know the map to be  
23 here whenever we want it.

24 Well, do you think we should  
25 adjourn until 2, Mr. Scott?

26 MR. SCOTT: Mr. Marshall is  
27 anxious to begin, if it pleases you, sir. He indicated  
28 that to me.

29 MR. MARSHALL: Well, sir, I'm  
30 prepared to go ahead or not to go ahead. I think that



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 we might get a reasonable way along in my cross-  
2 examination if we continue till the usual time.

3 THE COMMISSIONER: All right,  
4 carry on.

5 M R. MARSHALL: If it suits  
6 the convenience of yourself, sir, and Mr. Gibbs.

7 THE COMMISSIONER: Fine, yes  
8 it does, so carry on.

9  
10 CROSS-EXAMINATION BY MR. MARSHALL:

11 Q Mr. Mirosh, looking at  
12 your C.V.I note that you have both your degrees in  
13 electrical engineering.

14 A That's correct.

15 Q And you seem to have  
16 very extensive experience in the field of electrical  
17 engineering. I notice your time with Winnipeg Hydro,  
18 and with Taylor Instrument Company. I take<sup>it</sup> that would  
19 relate to electrical engineering, would it? Electrical  
20 instrumentation.

21 A Not specifically. It  
22 related to process controls which applies to many  
23 industries.

24 Q I see, and I see during  
25 your time with Alberta Gas Trunk Line you've been  
26 involved in controls as well and studies in automation  
27 and so on.

28 A Yes, that's true,  
29 partially.

30 Q Could you tell us, sir,



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
CrossExam by Marshall

1 something about your experience in pipeline routing?

2 A My curriculum vitae does  
3 not show any, and if I had any I would have put it  
4 there.

5 Q Sir, there's just a  
6 small point connected with the large map that's  
7 being marked as an exhibit behind you. Do I understand  
8 correctly that the map does show the proposed cross-  
9 delta alternative route from the Richards Island  
10 area south, as a broken line, and that's the line that's  
11 very -- just below the heavy black line which I  
12 understand to be the Foothills route?

13 A It is meant to show it  
14 correctly, yes.

15 Q I see. If I can refer  
16 you to page 2 of your prepared evidence and the  
17 next to last paragraph where you deal with the decision  
18 of Foothills not to cross both the Mackenzie and the  
19 Liard basins -- rivers. I take it that this is some-  
20 thing of historical interest in light of the amendment  
21 of the Arctic Gas application with the Fort Simpson  
22 route revision?

23 A Well, it is historical  
24 at this point in time, but the logical procedure that  
25 we were involved in at the time this change by  
26 CAGPL was not filed, in fact we were not aware of it  
27 and we did go ahead on the strength of what I say  
28 in my direct testimony to make the change.

29 Q Sir, turning to page 3  
30 in the third paragraph you speak about making use of



Mirosh, Fawcett, Brouckhout.  
Gillespie, Drew  
Cross-Exam by Marshall

1 certain drill information, and then engaging consultants  
2 to carry out a drilling program in the southern 100  
3 miles of your route. I was wondering, sir, whether the  
4 results of that program are all referenced in the  
5 application material, or if there are additional  
6 reports or studies?

7 A I'm not certain. Perhaps  
8 if I could ask Mr. Fawcett to answer that.

9 Q Thank you.

10 WITNESS FAWCETT: I believe  
11 that the original information that was used from the  
12 CAGPL submission was shown on it, and that our  
13 drill hole location south of Fort Simpson are shown on  
14 it; but since the application we've had additional  
15 field programs which are not shown on these sheets.

16 Q I see. Sir, have there  
17 been reports produced as a result of these additional  
18 drilling programs?

19 A We have since the  
20 application received reports, I believe Mr. Gillespie  
21 can substantiate that.

22 WITNESS GILLESPIE: I don't  
23 think we've received the report yet, but we will be  
24 receiving it very shortly.

25 MR. MARSHALL:  
26 I take it then Mr.  
27 Gibbs will advise us when these reports become  
28 available, Mr. Gibbs?

29 MR. GIBBS: Yes.

MR. MARSHALL: Thank you.

30 Q I note, Mr. Mirosh, that



Mirosh, Fawcett, Bouckhout  
Gillespie, Drew  
Cross-Exam by Marshall

1 there has been no list attached to the synopsis of  
2 evidence of your panel setting out the reports and  
3 studies upon which the panel members rely. It may be  
4 that it simply wasn't included with my copy. I was  
5 wondering whether there was such a list?

6 WITNESS MIROSH: It's in  
7 preparation, sir. I'm sorry we did not have it attached.  
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Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 MR. MARSHALL: Well, sir, if I might  
2 just comment on that, without that list and without  
3 knowledge of what it is that the panel is relying on  
4 in support of their evidence it's -- it makes it some-  
5 what difficult for us, and I'm sure for other counsel,  
6 to obtain advice with respect to matters for cross-  
7 examination, and I mention that only because we may  
8 find on receiving the list and reviewing the reports  
9 and studies that it's necessary to ask Mr. Gibbs to  
10 call back the panel, or some of the members of the  
11 panel so that we can go into this in greater detail.  
12 I trust he has no objection to that.

13 M R. GIBBS: I have no basic  
14 objection. I was just enquiring of Mr. Hollingworth  
15 to see if this has become a matter of practice, or  
16 whether it's an obligation. If it's an obligation  
17 then we have erred in not including it.

18 MR. MARSHALL: I think it's  
19 enshrined in the rulings, sir. I have a copy of them,  
20 and if Mr. Gibbs would like to take a look. I appre-  
21 ciate you've been under some time pressure, Mr. Gibbs,  
22 I'm not making a big point of it. I'm just saying  
23 that if we find it's necessary to go back into it  
24 I'm sure you'll understand it's necessary because we  
25 didn't have the material before the panel was pre-  
26 sented to give evidence.

27 Q Mr. Mirosh, turning to  
28 page 4 of your evidence, you make reference to  
29 environmental advice that led you to stay at least  
30 five miles away from Travaillant Lake, and from denning



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 areas near the Thunder River. I wonder, sir, if you  
2 could identify the source of the data and perhaps  
3 the reports that you're relying on?

4 A If I may, I would like  
5 to direct that question to Mr. Bouckhout.

6 WITNESS BOUCKHOUT: In answer  
7 to that question, there is information available,  
8 mapped information which relates to the denning  
9 areas found on the Thunder River close to the mouth  
10 of the Thunder River. Now I believe -- I'm not  
11 positive on this but I believe this information was  
12 found in a consultant's report in regards to the Mac-  
13 kenzie Highway. There is also a great deal of informa-  
14 tion on the general Travaillant Lake region. This  
15 information is found on various maps, including the  
16 Arctic Land Use series.

17 Now we simply decided that  
18 rather than taking a chance, five miles is obviously  
19 a very arbitrary distance, so we decided that rather  
20 than taking a chance on staying near Travaillant Lake,  
21 since it was known as a relatively sensitive area,  
22 we decided to route completely out of that region and  
23 also in conjunction with the Thunder River.

24 Q I wonder, sir, if I  
25 might have the specific references that you relied  
26 on in support of this statement. I'd like you to  
27 produce the reports or identify those specific maps  
28 or studies of others that you rely on in this area.

29 MR. GIBBS: We'll identify  
30 then, sir, but if they are reports that are sort of



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 in the public domain I think my friend can obtain them  
2 just as easily as we can.

3 MR. MARSHALL: Well, that's  
4 fair, I just want to know what it is, the source of  
5 the information behind the assertion.

6 Q Sir, I note a couple of  
7 references in this material and indeed in other materials  
8 of Foothills, such as this comparison of Foothills and  
9 the Arctic Gas proposal that Mr. Gibbs made available  
10 the other day, a pet phrase pertaining to the route  
11 location, the north end of the delta, and that is  
12 found as well on page 4 of your evidence which says:

13 "A deviation which serves no Canadian purpose,"  
14 I wonder, sir, if you as an engineer have specific  
15 engineering or economic studies that back up that  
16 assertion, or is this simply an editorial comment?

17 MR. GIBBS: Surely he's a  
18 Canadian citizen and you don't have to be an engineer  
19 to look at the map and see that it's not needed to  
20 carry Canadian gas.

21 MR. MARSHALL: Well, surely  
22 sir, it's arguable and it will in another forum be  
23 argued that the economies to be achieved through the  
24 joint transportation of gas from both sources at the  
25 earliest point possible is in the public, Canadian  
26 interest, and it does serve a Canadian interest. I'm  
27 wondering whether this witness, having made this  
28 assertion I think twice in his evidence, is basing it  
29 on a study, hard data, report, or is it simply an  
30 editorial report comment?



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 THE COMMISSIONER: Well, it  
2 may well be that it is the latest gun being fired in the  
3 Blair-Horte controversy, and that's a controversy that  
4 will go on. It has crept into this Inquiry's  
5 proceedings, it will go on before another tribunal,  
6 and will go on in public, as it should, and if these  
7 gentlemen who work some references to their side on  
8 that particular question in their prepared evidence  
9 it may be a sin, but it's one that I think Arctic Gas  
10 may well have committed in the first instance.

11 MR. MARSHALL: Well, sir, --

12 THE COMMISSIONER: I'm not  
13 going to get exercised about it one way or the other.  
14 What do you want to say?

15 MR. SCOTT: Well, surely,  
16 Mr. Commissioner, it's a matter that can be overlooked.  
17 I think Arctic Gas' material occasionally strayed from  
18 purely technical to sound salvos in the general  
19 campaign. My only observation is that it casts some  
20 doubt on Mr. Bibbs' observation that he played no  
21 part in writing or reviewing the transcripts. But I'm  
22 not concerned about that at all. I wouldn't expect  
23 it otherwise.

24 MR. MARSHALL: Well, sir, the  
25 witnesses, I understand, are going to give us a list  
26 of the reports and studies that they're relying upon  
27 in support of their evidence, and perhaps we'll get  
28 at it that way.

29 THE COMMISSIONER: The point  
30 of this is, the point I'm interested in is it's a



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 different route, it's impact may be less. At any  
2 rate it's a different impact, let's put it that way,  
3 so that we don't have to thrash that out at this  
4 stage.

5 MR. MARSHALL: Well sir, I'm  
6 prepared to leave it then.

7 Q Mr. Mirosh, also on  
8 page 4 you make reference to avoiding the Ebbutt  
9 Hills Plateau as it is a proposed International  
10 Biological Program site.

11 WITNESS MIROSH: Yes.

12 Q I was wondering, sir, if  
13 you were aware of evidence that's been given before  
14 the Inquiry by Dr. Geist in Whitehorse, who according  
15 to his resume, has had an involvement as co-chairman  
16 of Panel 10 of the Western Arctic & Canadian Committee  
17 for the International Biological Program. Dr. Geist  
18 spoke, as I recollect his evidence, of the advantages  
19 of the presence of an industrial undertaking such as  
20 a pipeline in proximity to an I.B.P. site as it  
21 affords an opportunity for scientists to study the  
22 impact of man's activities under controlled situations.  
23 Are you aware of any such evidence?

24 A No sir, I'm not.

25 Q Sir, do you have any  
26 knowledge of I.B.P. sites having been enlarged so as  
27 to include sections of proposed pipeline route, on  
28 the Arctic Gas proposed routing?

29 A Would you repeat that  
30 because I'm not sure if I have it correctly?



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 Q It's my information, sir,  
2 that there have been instances or at least a specific  
3 instance of which I have knowledge of an I.B.P. site  
4 having been enlarged so as to extend across the proposed  
5 routing of the Arctic Gas Pipeline.

6 A I have no such knowledge,  
7 but perhaps Mr. Bouckhout, if he has such knowledge,  
8 could comment.

9 WITNESS BOUCKHOUT: I have no  
10 such knowledge either.

11 MR. MARSHALL: My instructions  
12 are it's at a site at or near the Firth River.

13 Q Mr. Mirosh, as I under-  
14 stand the Foothills application, and I've had reference  
15 to Part 3 facilities, Section 4, "Design and capacity"  
16 and the reference is 3-B-4.5. Foothills intends to  
17 chill to station 14, to Milepost 688.

18 WITNESS MIROSH: Yes, we do  
19 intend to chill to station 14.

20 Q Could you just point  
21 that out on the map, sir?

22 A Yes sir. The last  
23 chilling station will be station 13, Station 14 is  
24 south of the Mackenzie River crossing near Fort  
25 Simpson, which will not have chilling.

26 Q Do I understand then  
27 that the gas will be below 32 degrees Fahrenheit  
28 until it reaches, or until it leaves station 14?

29 A It will be below 32  
30 degrees Fahrenheit until it gets into station 14.



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1  
2 THE COMMISSIONER: And you  
3 don't chill from there to the border?

4 A That's correct. We do  
5 propose to cool at the last station to prevent excess-  
6 ively high temperatures.

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1 Q That

2 last station being station 14?

3 A Station 17, just north  
4 of the 60th parallel.

5 Q And I take it you are  
6 familiar with the views that Dr. Adam expressed  
7 in evidence here in June as a member of the  
8 Environment Protection Board? He urged that the  
9 chilling terminate I think at the Willowlake River.  
10 I was just curious whether you had considered his  
11 views in making that determination.

12 A Well, sir, others  
13 in our group may have, but we had geotechnical  
14 concerns -- geothermal concerns to do so.

15 MR. MARSHALL: Q So  
16 this station that we have been talking about, 14,  
17 and indeed 13 in this entire region of your  
18 proposed line is in the discontinuous permafrost  
19 zone?

20 A In our thinking the  
21 discontinuous permafrost does extend somewhat south  
22 at Fort Simpson, but it is very, very little.

23 Q And it extends north  
24 of Fort Simpson some distance?

25 A And north of Fort  
26 Simpson presumably to Fort Good Hope.

27 Q Do I understand correctly  
28 sir, that with the chilled pipeline in the discon-  
29 tinuous permafrost Zone, there is an engineering  
30 concern with unfrozen frost susceptible soils, due



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 to the potential for the development of frost  
2 heave ?

3 A Yes, we are studying that.

4 Q Now, sir, you have  
5 spoken of the deviation of the Foothills route  
6 west of the Ebbutt Hills, for reasons that we have  
7 discussed relating to the proposed I.B.P.site. I  
8 was wondering, sir, if you had made an assessment of  
9 the percentage of your route as compared with the  
10 Arctic Gas route that passes through thawed soil  
11 in this area?

12 A Perhaps I could pass  
13 that question on to Mr. Gillespie.

14 WITNESS GILLESPIE: A No,  
15 we have not made a study of this, comparing the  
16 two routes.

17 Q I was wondering,  
18 sir, if you might be prepared to accept an estimate  
19 of my advisors, that approximately 30% of the Foothills  
20 route around the Ebbutt Hills is frozen and about 70%  
21 is not frozen, do you have any opinion on that?

22 A Not at this time, no.

23 Q I am also instructed  
24 and I would ask whether or not you have any information  
25 on this, sir, that the Arctic Gas route through the  
26 area of the Ebbutt Hills, is through an area that is  
27 about 90% frozen, are you aware of that, sir?

28 A Would you repeat the  
29 question again, please?

30 Q Well, my instructions are,



1 sir, that along the Arctic Gas route, which crosses  
2 the Ebbutt Hills, the terrain is approximately 90%  
3 frozen. Do you have any information on that?

4 A No, we don't.

5 Q Mr. Mirosh, from  
6 Compressor Station 14 on the south side of the Mac-  
7 kenzie River, milepost 688, you have testified that  
8 the gas will be about 82° F.

9 WITNESS MIROSH: A Yes, sir.

10 Q My understanding of  
11 your evidence was that this was still in the  
12 discontinuous permafrost zone?

13 A To a degree.

14 Q Would it be correct,  
15 sir, that your concern in this area then would  
16 be with respect to possible degradation of the  
17 permafrost due to the higher temperature of the  
18 gas?

19 A That is correct.

20 Q Could you take a look,  
21 sir, at alignment sheet 0500-10, which as I understand  
22 it covers milepost 695.5 to 706.6.

23 A Your reference again,  
24 please?

25 Q 0500-10. Milepost  
26 695.5 to 706.6.

27 A Yes, we have it.

28 Q My instructions are,  
29 sir, that several of the bore holes on this  
30 alignment sheet show that permafrost is encountered



1 at depths up to 60 feet.

2 THE COMMISSIONER: Well,  
3 Mr. Marshall, I don't have this before me. It's  
4 almost 12:30, maybe we could come back to this  
5 at 2 o'clock.

6 MR. MARSHALL: Certainly.

7 THE COMMISSIONER: We'll  
8 come back at two. I am attending a luncheon, but  
9 I think that it should be possible to start again  
10 at two. If I am a few minutes late, don't let  
11 anybody leave.

12 (PROCEEDINGS ADJOURNED)

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Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. SCOTT: Before we begin, Mr. Gamble has complained that his name has appeared in the transcript only twice. Once when you said to him at Fort McPherson, "Mr. Gamble, will you clear those people away from the door." And once when you said at another community hearing, would he speak with you for a moment.

THE COMMISSIONER: There was a third occasion when I asked him to move a chair.

MR. SCOTT: He obviously overlooked that, MR. Commissioner, but I undertook to rectify the error by publicly on the record wishing him a happy birthday.

THE COMMISSIONER: Well, I understand that it is Mr. Bell's birthday tomorrow so--

MR. SCOTT: Well, each day in its own turn, Mr. Commissioner.

THE COMMISSIONER: Well, I thought so as not to clutter up the record tomorrow we could --

At any rate I think that Mr. Gibbs and Mr. Scott and I, all of whom have reached 40 at least, will welcome the fact that Mr. Gamble and Mr. Bell by next week will both of them be 30 and we can expect the maturity and responsibility that we've exemplified and that we've looked for from them.

Well, Mr. Marshall.



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 MR. MARSHALL: Yes, sir, I  
2 believe Mr. Gibbs wished to say something.

3 MR. GIBBS: Mr. Commissioner,  
4 Mr. Goldie asked for some financial figures to be  
5 compiled from the various filings. We find that they  
6 cannot be done from the filings alone. Some further  
7 figures have to be obtained from Calgary, so they  
8 will be put together by Mr. Mackie and furnished,  
9 but can't be done this week from what's here.

10 MR. MARSHALL: Thank you.  
11 Gentlemen, when we broke for lunch I believe I had  
12 asked you to examine -- Mr. Mirosh, -- alignment  
13 sheet 0500-10. You have had a chance to do  
14 that, sir, over the break?

15 A I have it before me  
16 now.

17 Q Yes, sir, my instructions  
18 are that several of the bore holes in this alignment  
19 sheet show that permafrost is encountered at depths  
20 up to 60 feet. Have you been able to reach the same  
21 conclusion, sir?

22 A I haven't found 60 feet  
23 but they do show permafrost, yes.

24 Q Specifically that would  
25 be B-3?

26 A Okay.

27 Q And you might also want  
28 to look at B-1, C-1 and B-5, which I am told exhibit  
29 substantial depths of permafrost.

30 Sir, does this situation give



1 you a potential problem from an engineering point of  
2 view with a warm gas line, given that you will have  
3 stopped your chilling operation at compressor station  
4 14?

5 A Yes, it is true that it  
6 may give us a potential problem and we are currently  
7 engaged in studying the geothermal aspects of  
8 melting such lenses of permafrost, but on the other  
9 hand in this area we feel that there is less permafrost  
10 than there is nonpermafrost so that a chilled line  
11 might in fact, in our opinion be much more damaging.

12 Q Do I take it, sir, that  
13 you haven't at this point determined what steps would  
14 be taken by Foothills to deal with this situation?

15 A Well, we are investigating  
16 the potential steps that we would take in design and  
17 these will be based on the results of our geothermal  
18 studies.

19 Q And so do I take it  
20 that one step that might be taken would be chilling  
21 the gas in this area?

22 A Well, I guess at this  
23 stage we wouldn't discount it, but we're certainly  
24 not planning on it at this stage.

25 Q Your analysis simply  
26 has not got to that point yet?

27 A Well, it hasn't but  
28 on the other hand we do feel that since there is  
29 far less permafrost in this area than there is non  
30 permafrost that we're likely going to be able to



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 handle the problem of thaw better than we could handle  
2 the problem of frost heave in this area.

3 A Sir, in originally  
4 selecting the routes for gas supply to communities,  
5 were environmental studies done?  
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Mirosh, Fawcett, Bouckhout  
Gillespie, Drew  
Cross-Exam by Marshall

1 It wasn't clear to me from the prepared evidence.

2 A Well, perhaps  
3 I could move that question to Mr. Bouckhout.

4 WITNESS BOUCKHOUT: In  
5 originally determining the actual locations of the  
6 supply lines to communities, of course we relied again  
7 on the information which was available up to that  
8 point. Now this is similar to the information we have  
9 relied upon before commencing field studies in terms  
10 of evaluating the mainline route. We have programs  
11 underway this summer in which we are doing actual  
12 environmental on-site evaluation of these lines and  
13 line locations as indicated in these sheets.

14 Q Do I take it that to  
15 the point of filing, at least, the environmental  
16 work that would have been done on these gas supply  
17 laterals would have consisted of a literature study

18 A It essentially consisted  
19 of literature studies, study of available maps, as well  
20 as using the judgment of the various people who were  
21 involved and who are quite familiar with a good deal  
22 of the area in which the lines are located.

23 Q You mentioned that field  
24 studies are under way, sir. Could you just outline  
25 what these studies are? The scope of them, and over  
26 what period they will be conducted, and when we might  
27 expect to have reports of the results of those studies.

28 A Yes, at present we  
29 have biological people in the field, as I've mentioned,  
30 in addition to geotechnical people. These people are



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1 actually going on the ground at the various locations  
2 and I'm speaking specifically here of the supply  
3 laterals. We are doing whatever studies we feel necess-  
4 ary over and above what has been available to now to  
5 adequately assess these. The studies are taking place  
6 throughout the entire summer. They are -- the study  
7 teams are represented by people who are involved in  
8 fish work, mammal work, bird work, etc., in the  
9 various environmental areas. We hope to have a  
10 report of the summer's field investigations prepared  
11 sometime this fall or this winter, although it's  
12 difficult to say exactly when this report might be  
13 available.

14 Q Well, sir, could you  
15 give me a breakdown of the personnel who would be  
16 involved on one of these teams doing your field  
17 studies?

18 A Are you speaking of  
19 individuals with names attached, or are you thinking  
20 of discipline-related?

21 Q I'm specifically inter-  
22 ested in the disciplines, but if it's easier for you  
23 to deal with that in the text of specific individuals,  
24 that's fine.

25 A As I mentioned, we  
26 have people involved with fisheries work, we have  
27 someone who is handling the mammal work for us, some-  
28 one who is handling the bird work for us, and this  
29 is essentially the makeup of the field team as it  
30 stands right now. It is, of course, subject to



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1 fluctuations, in some cases maybe an additional person  
2 may be put in, say, on revegetation efforts, but that  
3 is pretty much a standard team to take care of those  
4 three biological areas.

5 Q Do I take it it would  
6 be a team of three individuals?

7 A It can vary, of course  
8 there are three prime investigators, but they may  
9 have field assistants along with them as well, so  
10 it could range from three to five to six.

11 Q Who are the three individ-  
12 uals who are mainly involved in this, sir, and what  
13 are their disciplines?

14 A The three people primarily  
15 involved right at the moment would be Dr. Paul Whitney,  
16 who is involved with mammal work; Mr. Bob Brown, who  
17 is involved with bird work; and a couple of people,  
18 Mr. Sopuck and Mr. Hayden, who are involved with  
19 the fisheries work.

20 Q Sir, are these members of  
21 an environmental consulting firm, or are they separate  
22 independent consultants?

23 A They are members of an  
24 environmental consulting firm.

25 Q Which is?

26 A The Lombard North Group.

27 Q I see. When did they  
28 commence their field studies, sir?

29 A I can't give you the  
30 exact date, however, I think the field studies were



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1 commenced sometime in May, towards the mid to latter  
2 part of May.

3  
4 Q That would place it  
5 chronologically after the date of filing of the  
6 application.

7 A That is correct.

8 Q Are these individuals  
9 involved in what would be described as baseline studies?

10 A No I wouldn't say that.  
11 These people are simply evaluating the area on the  
12 basis of what we know of the north and the general  
13 surrounding terrain to date. They are collecting  
14 some quantifiable data, however this is not the entire  
15 reason for the actual program. We're simply applying  
16 what we know to the specific locations in terms of  
17 trying to evaluate these site specific locations from  
18 the point of view of the various biological disciplines.

19 Q Well, sir, you told us  
20 that the work that Lombard North is doing, as under  
21 way as you've just described, commenced in May. Can  
22 you tell us about the environmental assessment that  
23 was done on these gas supply laterals that took place  
24 prior to the date of filing of the application?

25 A Well, sir, I think  
26 I've already mentioned that. Prior to the actual  
27 filing of these applications we looked at the various  
28 maps and various reports and information which was  
29 available on the area, and this included information  
30 which was garnered through government reports, through



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1 private

2 consulting reports in relationship to the Mackenzie  
3 Highway studies and other studies of this nature, to  
4 the Canadian Arctic Gas Pipeline's reports, which are  
5 quite numerous and have some very good information in  
6 them, and so on and so forth.

7 Q When you say "we", sir,  
8 who do you mean?

9 A I mean ourselves, Foot-  
10 hills Pipe Lines and Lombard North jointly.

11 Q Well, can you get more  
12 specific, sir? I understand you didn't join Foothills  
13 until April or May, it's in your C.V.

14 A That's correct, sir.  
15 I might explain here that there are really two phases  
16 involved in the environmental assessment at that stage.  
17 When Lombard North was hired to do the actual impact  
18 assessment they were given a line on a map, as most  
19 other people were, including me, and various  
20 consultants to Canadian Arctic Gas. However, prior  
21 to this stage in terms of determining this line  
22 which was given to them, some information, some  
23 environmental information was taken into account in  
24 producing that initial line, and that was done by  
25 someone who was my predecessor in my particular posi-  
26 tion now at Foothills Pipe Lines.

27 Q Who was that, sir?

28 A That was Mr. John Ellwood.

29 Q Do I understand correctly  
30 then, sir, that since this field work has been under-  
taken, since the filing, that the original determination



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1 of the gas supply lateral route, you didn't really  
2 have the benefit of an environmental assessment?

3 A No, I don't think that's  
4 correct, sir. I think they did have the benefit of  
5 an environmental assessment. They had the benefit of  
6 having been assessed by people who were familiar with  
7 their various fields, and familiar with the literature  
8 that was available at that time, and that literature  
9 was used. It is, I think in the matter of answering  
10 this question, really a question of degree as to what  
11 constitutes an environmental assessment and what does  
12 not. I think there are various degrees of  
13 environmen tal assessment.  
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1 Q I understood from a  
2 previous answer that there had been some literature  
3 studies and maps that he's done, by environmentalists,  
4 do I take it though that there was no field work  
5 done on behalf of Foothills in connection with the  
6 route of these gas supply laterals until that which  
7 commenced in May of this year?

8 MR. HOLLINGOWRTH: He  
9 has already answered that question, Mr. Marshall.

10 MR. MARSHALL: Q Mr. Fawcett,  
11 would you turn to your C.V. that's been reviewed in  
12 your evidence today, Under the heading of "Experience".  
13 sir, I note the comment that you were associated with  
14 several pipeline, transmission line and highway loca-  
15 tion and legal surveys.

16 Sir, could you tell me which  
17 pipeline surveys you were associated with?

18 WITNESS FAWCETT: A We  
19 were associated with different surveys in Ontario  
20 down the southwest corner of the province. It was  
21 with the Dome group in that area and this was  
22 back in 1959, 1960 and so forth.

23 Q And sir, in connection  
24 with that work, what was your function as a surveyor?

25 A It was to survey the  
26 legal right-of-way, in cases where we ran into  
27 terrain problems, we reported them to the locator  
28 who in turn went to us in the field and relocated  
29 to avoid them. Our prime function was to prepare  
30 a legal plan of survey.



Drew, Fawcett, Mirosh  
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1 Q Do I take it that it would  
2 follow, sir, that you would be then dealing with a  
3 route that had been laid out by others?

4 A That is right.

5 Q You would be doing  
6 the legal survey of that?

7 A That is correct.

8 Q Sir, did you have any  
9 other experience in connection with selecting  
10 routes for pipelines?

11 A Not in necessarily  
12 pipelines. I was involved in the selection of  
13 routes for Teshmont Consultants on their Nelson  
14 River high voltage direct current line.

15 Q My information,  
16 sir, is that there are fairly major differences  
17 between route selection for facilities such as  
18 H.V.D.C. transmission lines and pipelines.

19 A There is basic differences.

20 Q You'd agree with me  
21 for example, that transmission lines, H.V.D.C. transmis-  
22 sion lines, the transmission lines are supported  
23 by towers and there is much less concern with the  
24 terrain between towers than there is for the  
25 pipeline that goes through terrain continuously.

26 A I think there might  
27 also be quite a bit of constraint placed upon trans-  
28 mission lines for footings in discontinuous permafrost  
29 and we were quite aware of that. We did quite a bit  
30 of revisions for it.



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
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1 Q Would it be correct,  
2 sir, that features such as deep gullies and so on  
3 can be spanned with transmission facilities and  
4 where as a pipeline might have to go through those?

5 A That is true.

6 Q And you made reference  
7 to the footings of the towers and so on. I take  
8 it that you'd be looking for different types of  
9 terrain than would a pipeline. For example, bedrock  
10 might be suitable for footings whereas for a pipeline  
11 they might want to look for something that could  
12 be gone through with a ditcher?

13 A I would imagine that  
14 that would be the case?

15 Q Sir, do I understand  
16 correctly from your evidence and that of the  
17 other members of the panel that it was you that had  
18 the responsibility to draw the line for the pipeline,  
19 the proposed Foothills pipeline on the maps in the  
20 alignment sheets?

21 A I was responsible for  
22 co-ordinating the information to be put on the map,  
23 yes. I did not actually end up drawing the final  
24 line on it, no.

25 Q That would be done by  
26 technicians acting under your direction?

27 A It was done as a  
28 group and we decided as the group the direction  
29 for the pipeline route. This was finally  
30 put on as an implementation by technicians, yes.



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 Q Could you tell us, sir,  
2 what disciplines were involved in that group that did  
3 put the line on the map?

4 A I believe the panel repre-  
5 sents the disciplines for the makeup of the locators.

6 Q Well, I am just interested  
7 in the process, sir, did you get together and  
8 collectively decide that you wanted the line to go  
9 from various point to various points, or did  
10 you actually have the responsibility to do that and  
11 then have it analysed by the other disciplines  
12 represented on the panel?

13 A We first of all got  
14 together to discuss the direction the line would  
15 possibly take and locate any of the areas of  
16 concern around that possible line. When this was  
17 done we drew where we possibly could the shortest  
18 route between them.

19 Q Sir, could you turn to  
20 page 10 of your evidence, the bottom of the page  
21 you mention that, quote: "There was, however,  
22 a great deal more information made accessible to  
23 us from a number of field studies carried out along  
24 the Mackenzie River Valley these past five or six  
25 years." Sir, I wonder if you might identify  
26 specifically the reports and studies that were  
27 available to you.

28 Q I think I am referring  
29 in this particular case to the reports and the  
30 information that was made available to us at the time



1 that Alberta Gas Trunk --

2 Q I am sorry, sir, I  
3 don't think you're quite close enough to the mike  
4 and Mr. Williams is having trouble hearing you.

5 A I will speak up for  
6 Mr. Williams.

7 I think the reports and  
8 information that I refer to in this particular case  
9 were those that we had available to us when the  
10 Alberta Gas Trunk was a part of the study group with  
11 CAGPL.

12 Q Does your answer,  
13 sir, also apply to the gas supply laterals which  
14 I understand are -- I should say, the laterals that  
15 would supply gas to the communities, which I understand  
16 are about some 450 miles.

17 A That is correct. I  
18 think Mr. Bouckhout covered that fairly well as  
19 to what we used for the initial review of the routing  
20 for those particular laterals. It was done as a group.

21 Q Specifically, sir, could  
22 you tell me what studies you were looking at?

23 A I believe my main  
24 function was just as co-ordinating the information  
25 and putting it together for alignment sheets.

26 Q Well, does that mean  
27 that you didn't look at any, sir, or --

28 A Oh, yes, yes, I was  
29 involved in getting the information put together and  
30 to arrive at a feasible solution for the different



1 groups as to their concerns and to have it transposed  
2 to direct alignment sheets.

3 Q Well, sir, as you appre-  
4 ciate, I don't have a list of the reports and studies  
5 that the panel is relying upon. Might you, at a  
6 later date, compile a list of the reports and studies  
7 that you did have available and that you did rely  
8 upon in this route selection process?

9 A I believe that we can,  
10 yes, as far as the information for the laterals, is  
11 this what you are referring to now, or the total in-  
12 formation?

13 Q Well, sir, I would like  
14 it for the total route.

15 A I think we can provide  
16 a list. A great deal of it is on the table, but  
17 we can provide a list of what we used.

18 Q And I'd like as well,  
19 sir, those that you specifically were working from.

20 A All right.

21 MR. HOLLINGWORTH: Do I  
22 understand you, Mr. Marshall, to say that you want the  
23 reports relied upon by each of these people as  
24 individuals as well as supplying on a panel basis?

25 MR. MARSHALL: I took it  
26 from the 'witness' answer that he was initially  
27 talking about the materials that had been relied  
28 upon by the panel and I asked him specifically if  
29 he could identify those things that he himself  
30 was relying upon.



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 So I asked for two separate  
2 things.

3 MR. HOLLINGWORTH: So  
4 out of the total you want the ones that Mr. Fawcett  
5 relied upon?

6 MR. MARSHALL:: I want  
7 both.

8 MR. HOLLINGWORTH: Well,  
9 I assumed from your request that the total panel's  
10 reading matter would include Mr. Fawcett's, so  
11 you want Mr. Fawcett's singled out from that list,  
12 is that correct?

13 MR. MARSHALL: Yes, I do,  
14 please.

15 MR. HOLLINGWORTH: Well,  
16 I am not sure that I can provide that, Mr. Commissioner,  
17 but I will certainly be supplying the list of the  
18 whole panel, as Mr. Gibbs indicated earlier.

19 MR. MARSHALL: Well, sir,  
20 the point I think I am getting at is this, I understand  
21 that Mr. Fawcett was co-ordinating this work of  
22 setting down the route and I am interested specifically  
23 in what he was relying upon. It may be that the  
24 other members of the panel did have an input and  
25 they would rely on things in their discipline. But  
26 I am specifically interested in what Mr. Fawcett  
27 was relying. I might say that one of the reasons  
28 for raising this is that as you know, the Foothills  
29 proposal contains an aspect of it related to laterals  
30 that would deliver gas to communities and Arctic Gas,



1 to my knowledge, hasn't studied these areas in detail  
2 and I am interested in having identified the sources  
3 of the information that were available to Mr. Fawcett  
4 and to the other members of the panel who he says  
5 were involved in this process with him.

6 MR. HOLLINGWORTH: Well,  
7 Mr. Commissioner, we quite realize that we are in  
8 error in not having a list of the documents relied  
9 upon by the panel attached to the summary of evidence  
10 that is called for by your rulings and we certainly  
11 intend to rectify this, but I think Mr. Marshall is  
12 asking for a new dimension to be added to that and  
13 that is a breakdown of what each individual panel  
14 member relied upon separately rather than the panel  
15 as a whole and certainly Mr. Marshall's client  
16 hasn't been complying with that sort of requirement  
17 and I am just wondering why should.

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Gillespie, Drew  
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1 MR. SCOTT: Mr. Commissioner,  
2 Mr. Marshall's clients were, insofar as they were  
3 asked, in examination, obliged to indicate what material  
4 they relied on in making their individual judgments,  
5 apart altogether from the bibliography attached to  
6 the list. I recall having asked some members of the  
7 Arctic Gas panel what they relied on and they told  
8 me, sometimes to my satisfaction, sometimes not, but  
9 respectfully I think the question is a proper one and  
10 if the individual members of the panel did in fact  
11 rely on any material in making their judgments, there  
12 should be no reason why they aren't able to say so  
13 and identify it.

14 MR. MARSHALL: There's just  
15 one other point I might add, sir. Just reading the  
16 whole of the answer to question 16 -- let me read  
17 the whole of it, the first eight or nine lines, I  
18 guess, contain the kernel of it, the question 16 on  
19 page 10 was:

20 "What steps were taken in the route selections  
21 initiated for the approximately 450 miles of  
22 community serviced lines proposed in the  
23 application?"

24 The answer:

25 "An identical approach to the mainline selection  
26 was applied for community service line routings.  
27 There was, however, a great deal more information  
28 made accessible to us from a number of field  
29 studies carried out along the Mackenzie River  
30 Valley these past five or six years, and the



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1 reports resulting from them."

2 Well, he's making a point that he had much more  
3 information in studying the laterals to supply the  
4 communities than they did for the mainline, and he's  
5 already, I think in his evidence, indicated he relied  
6 to a substantial extent on Arctic Gas material. Now  
7 I want to know what this "a great deal more informa-  
8 tion" that's made accessible was. It's that simple.

9 MR. HOLLINGWORTH: Do you  
10 have something, Mr. Fawcett, to say?

11 WITNESS FAWCETT: Yes, I  
12 think the questions preceding this, leading up to  
13 it, dealt with the routing on the new revised segments  
14 of the line, and in that particular case we approached  
15 the laterals the same as we did the new revised segments,  
16 and this is the reference that I was making of being identical.

17 Q Oh, I see. I perhaps  
18 misunderstood you. In any event, sir, I'd like the  
19 information that he's relied upon.

20 THE COMMISSIONER: Anything  
21 else to say, Mr. Hollingworth?

22 MR. HOLLINGWORTH: No, I have  
23 no further comments to make. I just think it's  
24 adding a new dimension, I just wanted to establish  
25 right now if we are to do that.

26 THE COMMISSIONER: Well, I  
27 think that the requirement that the reports and  
28 studies which the panel relies upon should be dis-  
29 closed is one that should be enforced here, in the  
30 case of the Foothills panel, and I see nothing wrong



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1 with the members of the panel -- with it being  
2 indicated to the extent possible the reports that  
3 each member of the panel relied upon in giving the  
4 evidence he did. It may be that all of them relied  
5 on all the reports listed, I don't know; but so far  
6 as it is possible to break it down, I think it should  
7 be. I don't think that's a difficult task. So I  
8 direct that Foothills comply with Mr. Marshall's  
9 request.

10  
11 MR. MARSHALL: Thank you,  
12 sir.

13 Q Turning to page 13,  
14 Mr. Fawcett, you talk about your involvement in the  
15 location of wharf sites. I was wondering, sir, if  
16 there were meetings held with either Northern  
17 Transportation or other barge operators on the Mackenzie  
18 concerning wharf locations?

19 A Yes, I believe there  
20 was, but I think that Mr. Mirosh can broaden on that,  
21 so if you'd like I'll have him bring that out.

22 Q Please do.

23 WITNESS MIROSH: Yes, we had  
24 meetings both with Northern Transportation and Kaps  
25 and also with the D.P.W. with respect to wharf sites.

26 Q Mr. Fawcett, turning to  
27 page 14, I refer you to the last paragraph and the  
28 answer to question 25, you say:

29 "The final route location will be verified  
30 upon completion of concentrated drilling at



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1       suspected unstable and sensitive terrain sites,"  
2       and then you go on to say,

3       "this is expected to take place during the  
4       centre line location surveys scheduled to be  
5       initiated just prior to construction."

6       My question, sir, is, isn't that a little late?

7                       WITNESS FAWCETT: I don't  
8       believe so. I believe that because of final stage  
9       in the location of that pipeline that it would rely  
10      to the very point of opening the ditch, and where  
11      we had suspected areas we perhaps would look at those  
12      just initial to that. I'm not saying for a moment that  
13      the drilling would be left to the very end, but that  
14      we would have particular cases that we may revise up to  
15      the last minute of the line location.

16                   Q     Well, sir , you're  
17      speaking specifically of suspected unstable and  
18      sensitive terrain sites, and I'm quoting you there,  
19      and do I take it that these have been identified?

20                   A     I don't believe that  
21      I'm capable of saying that they have been identified.  
22      I'm just referring to one of the last stages that  
23      we would be running into line location, and that we  
24      would accompany it with spot drilling that would  
25      perhaps not go into the actual specified areas in  
26      detail, but that we'd open up any suspected areas.

27                   Q     Well, do I take it, sir  
28      that you're not aware of any suspected unstable or  
29      sensitive terrain sites at the present time along the  
30      route proposed?



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1 A I would assume that  
2 Mr. Gillespie would be able to substantiate that  
3 there is, but in this particular case here I would say  
4 that we would be continuing, you know, up to the very  
5 last before we go into construction.

6 Q Perhaps Mr. Gillespie  
7 could be of some assistance then in indicating whether  
8 there are suspected unstable and sensitive terrain  
9 sites along the proposed route.

10 WITNESS GILLESPIE: There are  
11 certainly some terrain types which may indicate that  
12 there is probably unstable ground in very high ice  
13 content soils. These terrain types will be confirmed  
14 by drilling to just determine the extent and variation  
15 in soil and ice conditions within these individual  
16 terrain units.

17 Q In your judgment, based  
18 on the information presently available to you, are  
19 they likely to result in any significant route  
20 revision?

21 A I don't think so, no.

22 Q You mentioned drilling  
23 programs. Are any planned to be undertaken at the  
24 moment?

25 A There are drilling  
26 programs under way now.

27 Q Are these designed to  
28 deal with what you have identified as suspected unstable  
29 and sensitive terrain sites?

30 A No, they are river



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1 crossings in selected drainage areas, and in some  
2 selected land slide areas.

3 Q Well, what about your  
4 concern about the possible site, sir, unstable and  
5 sensitive terrain sites? Is work to be carried out  
6 in the -- in this coming -- over this coming winter  
7 at these sites, or have there been any definite plans  
8 made to drill these sites?

9 A Well, I think that Mr.  
10 Mirosh should answer this, but I am of the opinion that  
11 additional work will be done during this winter, yes.

12 WITNESS MIROSH: Well, I  
13 think what I'd like to add to what's been said is  
14 that we certainly expect that such situations will  
15 come up and when we find them at later dates we will  
16 drill them.

17 Q Well, I guess my problem  
18 is this, I understand from Mr. Gillespie that he  
19 thinks there are areas that he suspects of being  
20 unstable or sensitive terrain. I'm just wondering  
21 whether you have a program planned to drill those  
22 sites so that you can check this out?

23 A Well, I think I could  
24 talk a little bit about our current program, and  
25 perhaps it will help answer this question a bit. Some  
26 of the suspected unstable sites that we're looking  
27 at currently could well be river banks, and that's  
28 one reason for drilling, of course, to confirm that  
29 we do have a good site. We do have thoughts towards  
30 carrying out mathematical modelling of slope



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1 stability, and this would have to be supported by  
2 drilling, and of course one would want to drill un-  
3 stable sites to verify these models, and then to  
4 apply these models to other unsuspected sites. So to  
5 that extent we do have plans. We haven't finalized  
6 all of our drilling plans.

7 Q I have some questions  
8 for Mr. Bouckhout. Sir, beginning with your C.V., I  
9 see here that you received a B.Sc. in 1968 and  
10 your master's degree in 1972.

WITNESS BOUCKHOUT:

11 A That's correct.

12 Q The latter in ecology  
13 from the University of Calgary. It wasn't quite  
14 clear to me, sir, about the program that you're now  
15 enrolled in. Do I take it you're part-way through  
16 another master's program?

17 A That's right, sir, I am  
18 enrolled in a master's program in management studies  
19 which is given by the business faculty at the University  
20 of Calgary.

21 Q I see. Where are you  
22 in your course?

23 A I'm at the beginning  
24 of the course. I've completed one course thus far.

25 Q Sir, you've set out  
26 your experience. I wonder if you could tell us about  
27 the experience that you've had that's been related  
28 to any work on pipelines, environmental consulting  
29 pertaining to pipelines?

30 A Well, sir, I would like



Mirosh, Fawcett, Bouckout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 to start out by making it clear that I've not done  
2 impact assessment work and biological work on pipelines  
3 per se before, however I have done such work on  
4 transportation corridors, which are of course linear  
5 features and the work done in that nature is certainly  
6 applicable to the type of work which is required in  
7 pipelining and evaluating a pipeline routes

8 This work included my experience  
9 when I was with the Lombard North group as projects  
10 manager on the Mackenzie Highway, environmental impact  
11 work in the region of Fort Norman, Fort Good Hope,  
12 Norman Wells, and so on. I have also been involved in  
13 transportation corridor work in Alberta, in Banff  
14 National Park and Trans-Canada Highway, for instance,  
15 as well as some environmental planning work in Saskat-  
16 chewan on the Qu'appelleValley region. I think that  
17 is a relationship there of the three other corridor  
18 studies that I have done, have been involved in which  
19 I feel, you know, the actual approach relates to the  
20 Mackenzie Valley Pipeline.  
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1 Q Thank you, sir, that  
2 is helpful.

3 Could you tell us when  
4 you first did any work for Foothills?

5 A I believe, sir, the  
6 first time now you are speaking of when I first  
7 joined Foothills or before I joined Foothills?

8 Q Well, it wasn't clear  
9 to me from your C.V. whether the two dates coincided  
10 so --

11 A I was with the Lombard  
12 North group up until the 31st of March and I joined  
13 Foothills on the 1st of April. I commenced work  
14 while still at Lombard North for the Foothills  
15 project on or about the 1st of January.

16 Q And what were your  
17 responsibilities in connection with the Foothills  
18 project, sir, when you were at Lombard North?

19 A When I was with  
20 Lombard North I acted as project manager on the  
21 Lombard North input into the Foothills project and  
22 as such I was responsible for co-ordinating the various  
23 people who were involved in the different disciplines  
24 in preparing the environmental impact statement.  
25 I was responsible for liaising with the Foothills  
26 people on our input into their project and such  
27 duties involved in project management per se.

28 Q Did you have an involve-  
29 ment in putting together the environmental statement  
30 that is found in the application material, sir?



1                                   A     Yes, I did, sir. I  
2     had several discussions with the various individuals  
3     that were involved. I certainly did not write in  
4     entirety by any means the statement per se, however,  
5     I discussed this, we had specialists of each individual  
6     discipline as working for that particular statement  
7     and I certainly discussed the various issues with  
8     them from my experience and my knowledge of the  
9     situation and my previous experience in other  
10    studies of a similar nature.

11                               Q     Do I take it that  
12    Mr. Ellwood would have been in the role of looking  
13    after preparation of the environmental statement  
14    this time?

15                               A     Sorry, sir, I  
16    didn't catch that name.

17                               Q     Would Mr. Ellwood  
18    have had the responsibility for the environmental  
19    statement during this time, January to April?

20                               A     During the time that  
21    I was still at Lombard North prior to joining  
22    Foothills Mr. Ellwood would have had the responsibility  
23    in that regard, yes.

24                               Q     Sir, there has been  
25    evidence by this panel that the route selected by  
26    Foothills differs for about 200 miles in the  
27    north end and about 200 miles in the south end  
28    from that that is proposed by Canadian Arctic Gas  
29    and there is also evidence that there is a plan  
30    to construct approximately 450 miles of laterals to



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 supply gas to various communities which is a plan  
2 that is not being advanced by Arctic Gas. I was won-  
3 dering, sir, with respect to this 850 miles of route,  
4 whether in your professional opinion you feel there  
5 has been sufficient time for you to complete the  
6 environmental studies, or have others complete them  
7 for you that would be required to do an assessment of  
8 the environmental impact of the 850 miles of routing?

9 A I believe, sir, that  
10 there has been sufficient time and sufficient has  
11 been done in these areas to prepare an environmental  
12 impact statement, which, as I said in my direct  
13 testimony, really highlights the concerns we were  
14 interested in trying to identify the concerns and  
15 highlighting the areas.

16 Now, there is certainly  
17 work going on and we plan to continue this work in  
18 looking at more site specific issues and of course  
19 this is all relative to the various disciplines in-  
20 volved in terms of ground truthing the various  
21 information that is existing to date, and looking  
22 at the site on the ground, so this is the stage  
23 we are at now, sir.

24 Q Well, I would like  
25 to turn to that, sir. I think you deal with it at  
26 about page 16 in your evidence where you speak about  
27 the field studies that are currently being conducted.  
28 -- And you make mention of a multi-discipline program.

29 A I am sorry, sir, what  
30 was that page?



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 Q You make -- on page  
2 16, I think, sir.

3 A Yes.

4 Q Do I understand your  
5 evidence correctly, sir, that you are saying through  
6 these field studies by taking a multi-disciplined group  
7 to the site you are able to resolve conflicts  
8 between various interests, biological and engineering  
9 and so on on site? That is the purpose behind it?

10 A That is the purpose  
11 behind it, but I should qualify resolve. This is  
12 not the final resolution of the situation. What we  
13 are attempting to do here is to have geotechnical  
14 people and biological people spatially together as  
15 much as possible so that when one of the teams  
16 came up with an issue, which, as I said, could  
17 warrant an alteration and refinement in the actual  
18 route location in a particular area, the geotechnical  
19 people would be available there or very nearby  
20 who could look into the situation in the general  
21 area of that potential refinement and be able  
22 to indicate at that time whether they could find  
23 a feasible route from their point of view.

24 Now, this is obviously not  
25 the end of the process. The process continues on  
26 up with the geotechnical people reporting to Foothills  
27 and the biological people reporting to myself and  
28 the process continues there.

29 Q Sir, did we understand  
30 correctly that when you gave your evidence you added



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 where possible after the answer to question 31, so  
2 that it would read, "Locations are being resolved  
3 on site where possible"?

4 A That is correct,  
5 sir.

6 Q Do I take it from that,  
7 sir, that you find that it's just not feasible in  
8 all cases to have the various disciplines that must  
9 be involved in such a decision represented in such  
10 a multi-disciplinary party that visits the site.

11 A Well, I think in answer  
12 to that, sir, my "where possible" is really in  
13 reference to the fact that it is very difficult in all  
14 cases to reach an agreement between geotechnical  
15 people and environmental people and any others that  
16 might be involved on site, therefore it would have  
17 to go one stage further, or perhaps even two stages  
18 further.

19 Q I take it that in  
20 many instances there would be a necessity to gather  
21 data and have it assessed by the various scientific  
22 disciplines before any sort of a meaningful judgment  
23 could be made which would allow you to resolve conflicts  
24 between the competing disciplines.

25 A Well, sir, I don't know  
26 whether I agree with your suggestion that this occurs  
27 in many instances. Certainly it depends on what we  
28 might be talking about in terms of route refinements,  
29 in terms of any possibilities of a change in route.  
30 I think certainly if something were to come up where



Drew, Fawcett, Mirosh  
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1 some very major change was warranted, for instance,  
2 if we were to look at something like a cross-delta  
3 route or something like that, which we obviously  
4 are not, then certainly, sir, I would say that yes,  
5 definitely more data must be available. However,  
6 when we are talking about more minor refinements,  
7 in other words, again you can't pin it down to a  
8 specific case, but it is very much tied to the  
9 type of landscape you are talking about, for instance,  
10 if your small refinement might move from mountains  
11 out onto the flats, then certainly that's possible,  
12 however, if it is simply a matter of being on one  
13 side of a creek or another, then that is a different  
14 story, then I would say that does not necessarily  
15 require further data per se.

16 Q I guess the problem  
17 I have might come from my perception of what you  
18 say is the process here, and sir, my understanding  
19 is more or less this; you are dealing with 850 miles  
20 of new line relative to the Arctic Gas proposal which  
21 has been studied in considerable detail by  
22 environmentalists and you have had a fairly limited  
23 time in which to carry out studies and I believe  
24 that you have told me that until this May it was  
25 basically map and literature searches, and I have  
26 some difficulty understanding the process that would  
27 be involved in making a decision on site with a  
28 small group when you don't have any base line  
29 studies and you are relying only upon literature  
30 researches and for example, your're considering a



Drew, Fawcett, Mirosh  
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Cross-Exam by Marshall

1 river crossing location, you may not yet have any  
2 base line data on the fish that use that river and  
3 so on.

4 A In reference to  
5 your example of a river crossing location we are  
6 in fact doing studies right now at river crossing  
7 locations in terms of having fisheries people on  
8 site and doing various fisheries studies including  
9 electroshocking and so on and so forth. They are  
10 in fact investigating the crossings as they stand  
11 now in terms of trying to evaluate them from the  
12 point of view of the fisheries concern which might  
13 be applicable to that particular site.

14 Now, in a little bit  
15 broader reference to saying that possibly we don't  
16 have enough information available, that we just  
17 came on the scene late, I might say, sir, that we  
18 are very fortunate in having a lot of information  
19 available and this of course is through the  
20 various studies of your own client's group and various  
21 other people in the area.

22 Now, a lot of this kind  
23 of information is in varying degrees of site  
24 specificity as I said in my testimony and it  
25 is -- a great deal of it is very applicable to the  
26 area we are dealing with. In fact, as we have  
27 said, in the middle 400 miles we are very, very  
28 close to the existing alignment which CAGPL has  
29 suggested. In the other areas we don't diverge  
30 a great deal and by the same token, sir, I'd say



Drew, Fawcett, 8438  
Mirosh, Bouckhout,  
Gillespie,  
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1 that in terms of the site information, I think what  
2 we are trying to do is apply what we know of the  
3 area to a specific site. For instance on a lot  
4 of the information that is available right now,  
5 it is mapped out as a general -- maybe I should  
6 take an instance as a general waterfowl production  
7 area or something like that. Now, what we are  
8 interested in is zooming in on our particular  
9 line and trying to identify how our line relates  
10 to that particular waterfowl production area if  
11 in fact we are near or within an area which was  
12 designated as a waterfowl production area.  
13

14 Q Well, I take it then,  
15 sir, that a line has been selected, you are now  
16 particularly in this 850 miles area where Arctic  
17 Gas does not propose to build, you are now undertaking  
18 site specific environmental work, such as the  
19 work on fish that you mentioned and that this may  
20 then lead to modifications of your routing at those  
21 specific sites.  
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Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1                   A     You mentioned 850 miles  
2     where Arctic Gas did not propose to build. What does  
3     that relate to?

4                   Q     Well, as I understand it,  
5     there is 200 miles of the Foothills routing at the north  
6     end that we're told is different from Arctic Gas,  
7     and 200 miles at the south end, and then 450 miles  
8     of gas supply laterals, in all of those areas where  
9     Arctic Gas would not be intending to build its pipeline,

10                  A     Yes, all right. We are  
11     proposing and certainly we are carrying on some site  
12     specific studies right now, and we certainly will do  
13     some more in the future to refine that particular  
14     route; but I might in explaining what I've answered  
15     in some of your previous questions, if we look for  
16     instance at a number of streams or rivers that are  
17     crossed by lines in a lot of cases where we are  
18     different from the CAGPL route we are still crossing  
19     the same streams, and there is information on those  
20     streams as to whether they support fish or not, and  
21     if they do support fish where the fish are and what  
22     kind of use those particular streams are being made  
23     of, so what I'm saying now, sir, is that data is  
24     applicable to our study as much, or our route, etc.,  
25     as much as it is applicable to the Canadian Arctic  
26     Gas Pipeline route and we would simply look at the  
27     site specifics of where we happen to cross those  
28     particular streams in terms of going further.

29                  Q     I see, so you have this  
   work then available to you and you're able to rely



Mirosh, Fawcett, Bouckhout  
Gillespie, Drew  
Cross-Exam by Marshall

1 upon that in carrying out your further work.

2 A We have the CAGSL reports,  
3 yes.

4 Q Turning to page 18, sir,  
5 there's reference to your current field programs which  
6 include on-site evaluation. With respect specifically  
7 to borrow sites, sir, I was wondering whether or not  
8 test holes have been bored or dug to enable you to  
9 assess the quality and quantity of borrow?

10 A Are you addressing that  
11 question to me, sir?

12 Q It's in your section of  
13 the evidence, sir. If you'd like to pass the question  
14 to someone else --

15 A Yes, I think I would  
16 like to refer that question.

17 MR. MARSHALL: O.K., perhaps --

18 MR. HOLLINGWORTH: I'm sorry,  
19 the panel might have the question, but I don't, Mr.  
20 Marshall. Could I have it repeated?

21 MR. MARSHALL: Certainly.

22 Q On page 18 there is  
23 reference to :

24 "Our current field program includes on-site  
25 evaluations of all facilities locations."

26 And the sentence goes on. My question was whether in  
27 the field program on your on-site evaluations, your  
28 assessment of borrow sites they are drilling test  
29 holes or digging the sites to be able to assess quali-  
30 ties and quantities of borrow materials.



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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MR. HOLLINGWORTH: Thank you.

A I'm sorry, sir, I didn't quite get your question when I made that reference. I'm talking about on-site investigations which relate to the biological area. I was not referring to on-site investigations personally, at least, to actual drilling.

MR. MARSHALL: Q Well, you do have a reference in the previous page in answer to question 33:

"Included are borrow areas, access roads, wharves, stockpiles, and other meter stations..." It doesn't matter, if Mr Mirosh would like to answer the question, the point is I'd like to know whether or not the borrow sites, proposed borrow sites have either been drilled or dug?

WITNESS MIROSH: We have a large quantity of existing drilling information, and that coupled with visual field inspections by our team have been our primary sources of information.

Q I take it then that Foothills has not had any programs to drill or dig any of these sites to this date?

A They're in our plans.

Q When is it expected that those will be carried out, Mr. Mirosh?

A Well, I think I can't give you a specific time right now, but certainly a great deal of this information is available from other sources, such as DIAND and the various studies that



Mirosh, Fawcett, Bouckhout,  
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1 were done for the Mackenzie Highway. After we have  
2 assessed -- and we haven't completely assessed it --  
3 but after we have assessed how much of this informa-  
4 tion we can depend on and how much more new information  
5 we need we will then formulate our drilling plans.

6 Q Is that still sometime  
7 in the future?

8 A Yes.

9 Q Mr. Drew, I have a few  
10 questions for you, sir. My apologies for not being  
11 able to look at you when speaking to you, but with the  
12 setup with the chairs it's kind of inconvenient.

13 Sir, I would like you, if you  
14 would, to relate the photo interpretation work that  
15 you have done in connection with pipeline location.

16 WITNESS DREW: Yes, I think I  
17 can give you some more specific examples that aren't  
18 on that one sheet.

19 Q Please do.

20 A Well, for the past  
21 six years I have been involved primarily in surficial  
22 photo geological and terrain sensitivity interpreta-  
23 tion. We had a team in our firm doing that type of  
24 work; the largest single project in this mapping of  
25 terrain sensitivity photo mosaics accompanied by land  
26 use classification charts for the Canadian Arctic  
27 Islands for Arctic land use research program of the  
28 Department of Indian & Northern Affairs of the  
29 Government of Canada. Other previous projects include  
30 selection of air strip sites and related access in



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1 Canadian Arctic Islands, also for DIAND as it was  
2 called then, and similar studies in the Canadian Arctic  
3 Islands for various oil companies, terrain analysis  
4 studies with photo interpretation and field work in  
5 the Mackenzie corridor for a pipeline company, --

6 Q Well, it's that one I  
7 guess specifically, sir, I'd like <sup>you</sup> to elaborate on this.  
8 As I understood your comments, that's the first <sup>of the</sup> ones  
9 that specifically pertain to a pipeline.

10 A That was the first, yes.  
11 I've done two oil line routes.

12 Q I'd just like some infor-  
13 mation about ~~you~~ your work on those projects specifically  
14 related to pipelines, sir. Perhaps you would elaborate  
15 from the material that's in your C.V.

16 A Well, first I think all  
17 of this is related to pipelines indirectly because on  
18 terrain typing a corridor, I'm not picking the  
19 actual route for the pipeline, I'm terrain typing a  
20 corridor given to me, and I have had a lot of experience  
21 in identifying surficial geological mapping of  
22 terrain typing, if you wish, from aerial photos, which  
23 applies to pipeline or anything else you want to use a  
24 corridor / <sup>for.</sup> In other words, I'm saying I believe my  
25 interpretation is this is the terrain you'll have to  
26 deal with there. Specifically applying to pipelines,  
27 where studies for Mackenzie Valley Pipeline, the  
28 northern part of the Alaska border down the Mackenzie  
29 Valley in 1968, and again there was another study of  
30 a line up to the east side of the Mackenzie Delta from the



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 Norman Wells area a couple of years later, I don't  
2 remember the exact year.

3 Q Thank you, sir, that's  
4 very helpful. Sir, in your evidence at page 20 you  
5 refer to Dr. Mollard's work, and you make mention of  
6 having adopted his legend and terminology. I take it,  
7 sir, that you are generally familiar with Dr. Mollard's  
8 work and his reputation in the area of air photo  
9 interpretation.

10 A Yes, I am.

11 Q There has been evidence  
12 that the central 400 miles, approximately, of the  
13 Foothills routing is generally the same as that of  
14 Arctic Gas' proposed routing. Would you agree with me,  
15 sir, that in large measure your independent terrain  
16 photo interpretation corresponds closely in effect,  
17 it's in essence identical with that of Dr. Mollard for  
18 the same area?

19 A Well, it depends what  
20 you mean by "large measure". A considerable portion of  
21 it is, of course we found some differences, too.

22 Q Were those differences,  
23 in your opinion, significant?

24 A Yes.

25 Q I would like, sir, if  
26 you could identify those areas of difference, if  
27 you have that information.

28 A I can give you one  
29 example. We are still in the process of revising our  
30 material following field work and so forth.



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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1 Q Yes, you could give one  
2 example, if you would. I'd like you to provide me, per-  
3 haps at a later date if that's more convenient, with  
4 a list of those areas in which your analysis has been  
5 significantly different from that of Dr. Mollard?

6 A Well, we wouldn't be  
7 able to provide the list until we have completed our  
8 study, which is still on-going, of course, because  
9 we haven't finalized our interpretation yet. Our  
10 study is still -- as you know, it's an on-going study.  
11 We haven't completed our revisions, we haven't completed our  
12 field work yet. But a specific example, if you wish, there  
13 is an area on our alignment sheets 0400-06 and 07,  
14 between Milepost 380 and 390, more or less centering  
15 around 385, near McLean Creeks and Francis Creeks where  
16 our geologist who was mapping this followed the  
17 Mollard interpretation. We did agree with it initially  
18 just on the basis of photos, because we had no reason  
19 to disagree at that time. I didn't do this interpreta-  
20 tion in this particular area myself, one of our other geologists  
21 did. On Mollard's CAGLP alignment sheets, as well  
22 as on ours, it was mapped as an area in, well, it's  
23 RKM, in other words, ridge and knoll moraine with some  
24 drumlins showing and slope washed material on it,  
25 and quite near the -- and also some patches of bedrock  
26 thinly drift-covered, and right near to the boundary  
27 of a glacial lake basin which was a shallow layer  
28 over moraine, glacial moraine. Well, going there  
29 in the field and field-checking this, this summer we  
30 found actually that area is gravel, sand and silt



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Gillespie, Drew  
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1 on the surface, for a depth of at least two yards,  
2 and some places it's quite sandy on top; some places  
3 the gravel continues right up to the top, so it looks  
4 like beach deposit or outwash, something of that  
5 nature , and certainly not, the way it's mapped you'd  
6 get the idea it was fine soil and had a lot of clay  
7 in it and so forth, which it does not have. It's  
8 quite different from both construction sensitivity  
9 point of view, to have something that's quite gravelly  
10 and sandy and well-drained, and looking at the Geologi-  
11 cal Survey of Canada of open file maps on that area,  
12 they have two that cover it. They have terrain classi-  
13 fication sensitivity map, open file 125 released  
14 in December of 1972, and they have the open file  
15 surficialgeological land form map No. 155, released  
16 in June of 1973, which show that area as veneer of la-  
17 custrine beach deposits over what they call moraine  
18 or a till plain. Actually where we followed your  
19 interpretation on that, this was not left off, but  
20 the field verification would make us lean more towards  
21 the Geological Survey interpretation on this, and  
22 ours is, of course, being revised accordingly.  
23  
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1 Q So that I understand  
2 you in your earlier remarks to say that you haven't  
3 yet finished your terrain evaluation?

4 A That is correct. We've  
5 gone through once on the photos, made, as I said in my  
6 prepared evidence, that we made an interpretation which  
7 was not of course at that time verified by field  
8 checking. Then we've had a field checking program  
9 in which we have looked at some of these and realized  
10 some refinements and some changes have to be made  
11 in areas and we still have more field checking to do.  
12 When all the field checking is done, then -- we might  
13 use the term, polished up, our interpretation, our  
14 terrain typing will be <sup>polished up</sup> and we will have a much more  
15 accurate picture.

16 Q Well, do I take it that  
17 the mosaics then are going to be changed?

18 A Yes, there are going to  
19 be some changes in labelling and probably in boundaries.  
20 More likely in labelling.

21 Q When might we expect that  
22 this might be done?

23 A I'm not sure what the  
24 scheduling is. Maybe Mr. Mirosh can answer the  
25 question on scheduling.

26 WITNESS MIROSH: I wonder if  
27 I could just say, in the future.

28 Q Well, I wonder if in the  
29 interim between now and the future, whether it is five  
30 or ten years as some suggest, we can rely on the mosaics



1 as they appear in the application materials, or whether  
2 you feel that that is a preliminary look at it, and it  
3 is not reliable, and we should not have regard for it?

4 WITNESS DREW: I wouldn't say  
5 that it is not reliable. I would say that it is not  
6 100% reliable, nor is it ever going to be 100%. That  
7 is a state of perfection that will never be achieved  
8 of course in anything less exact than mathematics.

9 Q Let's put it this way,  
10 it's to the point where you think it has to be revised?

11 A I think it can be improved,  
12 yes. We want to do the best job we can, and so far we  
13 are still doing that best job. And can probably on the  
14 basis of this seasons field checking when it is finished,  
15 revisions can certainly be made by winter or so.

16 WITNESS MIROSH: We haven't  
17 discussed that yet, so I really can't put a date on it.

18 Q Well, I'll be asking Mr.  
19 Gibbs about that later on sir.

20 Sir, at or about pages  
21 21 and 22 of your direct evidence you deal with  
22 terrain sensitivity rating. As I understood the  
23 evidence, and correct me if I am wrong sir, the  
24 sensitivity of terrain in your judgement increases with  
25 such factors as decreasing drain size, increase in  
26 slope, and an increase in the amount of ground ice?

27 WITNESS DREW: That is true  
28 in general, it isn't 100% correlation straight line  
29 curve, but in general sensitivity does increase with  
30 those factors, yes.



1 Q And sensitivity would  
2 vary, depending on local environmental conditions such  
3 as climate, drainage, and vegetation?

4 A That's true. The same  
5 sub-soil won't have the same sensitivity in a permafrost  
6 and a non-permafrost climate, for instance, or in a  
7 flat ground or a sloping ground, or where well drained  
8 or poorly drained.

9 Q Could you just explain  
10 for me, sir, how the process-- how did the process of  
11 assigning sensitivity ratings work?

12 A Yes, I have had a lot of  
13 experience in this type of thing. The work I am doing  
14 for the ARctic Land Use research people, we identify  
15 units on aerial photos, and we make a very large  
16 chart describing various characteristics of these,  
17 because of identifying characters that we can see on  
18 the air photos. With that experience and with other  
19 experience and with a lot of experience walking on the  
20 ground, both professionally and recreationally, I  
21 have an idea of what -- of course, we know if we map  
22 something that is alluvial flood plain, or lacustrine  
23 plain or glacial lake basin as it is called in the  
24 this legend and so forth, we have an idea of what types  
25 of materials it is made out of in a given area.

26 And from the types of  
27 materials and the appearance on the air photos, we  
28 have a pretty general idea, in the majority of the cases,  
29 its' relative sensitivity. Now these are qualitative  
30 and not quantitative things of course.



1 And then when I go to  
2 field check these, I not only try to identify the  
3 units and verify the units, but I also look at places  
4 where there have been seismic trails or roads or other  
5 human encroachment upon the various terrain types, and  
6 I see what has happened to these as a result of these  
7 activities. Then I can refine my estimates of the  
8 terrain sensitivity. Now, the sensitivity numbers on  
9 our alignment sheets now are just from the photo  
10 interpretation. When we do our revisions they will of  
11 course in some cases be revised as a result of what  
12 we have learned in the field.

13 Q Well, sir, does this  
14 get you to the point where you can assign a specific  
15 sensitivity rating, or would it still be a range  
16 for each unit?

17 A Oh there will always be  
18 a range, because if you take a deposit like an  
19 alluvial flood plain in the areas where the streams  
20 actually had their main channels, it is going to be  
21 quite coarse gravel and sand. You get a back water  
22 area, it would be silt, and maybe fine sand, and  
23 possibly even a little clay in the same flood plain,  
24 an area which would be just that far apart, a millimeter  
25 apart on the alignment sheet. So you have to give the  
26 ratings within the units, some units will be quite  
27 uniform and have very narrow range of ratings, other  
28 units will have a wider range.

29 Then if you want to get  
30 more specific as to the sensitivity of the spot where



1 compressor station or a pipeline is going to be or  
2 something, then of course you go to the geotechnical  
3 studies for the more detail ed work, as I have  
4 indicated ours is a more reconnaissance basis, than  
5 geological.

6 Q I suppose the project  
7 that you have in mind is a factor in considering  
8 sensitivity. What is sensitive for one purpose, might  
9 not be sensitive for another?

10 A Yes. I should expand  
11 upon that. The sensitivity that I am mapping is not  
12 necessarily  
engineering suitability' in other words, I'm not saying  
13 how much the pipe will settle, or what construction problems  
14 they are going to have. I am speaking of sensitivity  
15 from the point of view of changes affected upon the  
16 landscape, to change it from its' natural condition  
17 when it can't revert to that natural condition easily.

18 In other words, say you  
19 have a soft flood plain that was quite silty, you could  
20 cross that with a vehicle, you could make tracks and  
21 make a tremendous change, but two days later the stream  
22 has filled those in so you have no lasting change, so  
23 really that would be low sensitivity.

24 But I am speaking of  
25 sensitivity from the environmental point of view, from  
26 the point of view of the esthetic value of the land, of  
27 the use of the land, of causing slides, and so forth.  
28 And not from engineering problems, that's in the  
29 realm of geotechnical. This just shows that we are  
30 concerned with the environment and we want to build a



1 pipeline with the minimum of impact.

2 Q It sounds to me to be  
3 very complicated, and to require quite a degree of  
4 personal judgement. Is that a fair statement?

5 A Well, I think anything  
6 to do with geology is not an exact science like  
7 mathematics. It is an interpretative science, and the  
8 more experience and the better the interpreter the  
9 better it can be, but it is never going to be 100%,  
10 no.

11 Q Well, do I understand  
12 correctly sir, that from part to part of a particular  
13 terrain unit in which you were assigning your  
14 sensitivity rating, the sensitivity would vary over  
15 a range because of the factors that we have discussed  
16 right at the beginning having to do with vegetation,  
17 and slope and the size of the granular material, and  
18 ice content, and factors such as that?

19 A That is correct. As I  
20 explained before my example of the alluvial flood plain,  
21 material and sensitivity can vary quite a lot in an  
22 area the size of this room, yes.

23 Q Then in each unit then,  
24 there might be a range, it may be quite a substantial  
25 range because of the variance in the local conditions  
26 from one part of that terrain unit to another? There  
27 may be very considerable variation?

28 A Yes, it can be. Say  
29 you have hummocky moraine, you might have very low  
30 sensitivity in the hummocks, and very high sensitivity



1 in the swales or the hollows between them.

2 Q Well, then sir, can you  
3 tell me how the sensitivity rating is applied by  
4 route location engineers? Given this variation from  
5 one specific point within the terrain unit to another?

6 A Well, that's really more  
7 in the realm for the geotechnical people to answer.  
8 But as I have said, when they want to get specific  
9 as to a specific spot, they drill it and they get the  
10 more detailed information. I'm just giving the  
11 general values over this corridor to help in avoiding  
12 the highly sensitive units.

13 Q Well, maybe Mr. Faucett  
14 could be of help here in telling us how this terrain  
15 sensitivity rating was actually applied in marking the  
16 line on the map?

17 WITNESS FAUCETT: I think you  
18 have the wrong man, I'll refer you to Mr. Gillespie  
19 who is the geotechnical expert here.

20 THE COMMISSIONER: Well, Mr.  
21 Marshall, I think that you can tackle that again after  
22 we have had a cup of coffee.

23 MR. MARSHALL: Certainly.

24 (PROCEEDINGS ADJOURNED)  
25  
26  
27  
28  
29  
30



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(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. HOLLINGWORTH: Perhaps before Mr. Marshall commences his cross-examination, the final part of Mr. Goldie's request about Pan Alberta Gas application to export gas from Canada-- Yesterday Mr. Goldie, indicated he would like to know when that application was filed and the information is that it was filed under a covering letter dated November the 15th, 1973, although the actual application was dated November the 12th, 1973.

MR. MARSHALL: Thank you, sir NOW, gentlemen, we had been at the point of dealing with the terrain sensitivity rating and I was asking Mr. Fawcett how he had been able to apply the terrain sensitivity rating developed in the route selection process and I wasn't sure whether you were going to answer or you were going to try and pass the mike.

WITNESS FAWCETT: I was going to redirect it to Mr. Gillespie. Mr. Mirosh is capable of handling the same question if you'd like.

Q Well, perhaps -- I'd like to ask all three. Mr. Fawcett, I understand from the evidence that you had a fairly central involvement in selection of the route in placing it on your alignment sheets and so on and I was wondering if you made use of the terrain sensitivity rating yourself?

A Yes, we did consider



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1 it in our initial routing on the three mile wide  
2 corridor. This in turn then was referred to the  
3 geotechnical appraisal and when we had that confirmed  
4 we had more or less what we consider is our final  
5 selection for the corridor.

6 Q Yes, are you able to  
7 identify any specific areas where because of this  
8 terrain sensitivity rating you made changes in the  
9 route?

10 A I think the final  
11 location shown on the alignment sheets were a combina-  
12 tion of different aspects including terrain sensi-  
13 tivity.

14 Q Well dealing just with  
15 this one component, sir, I am interested in that.

16 A I can't recall any at  
17 the moment that I actually applied. There was a  
18 group of small ones that we put in.

19 Q Well, if you do recall  
20 any, and I trust you'll search your memory, would  
21 you let me know through Mr. Gibbs.

22 A I certainly will.

23 Q Thank you. Mr. Mirosh,  
24 perhaps you could deal with the same point.

25 WITNESS MIROSH: Yes, sir.  
26 Our approach towards terrain sensitivity was to  
27 allow us to lay out an initial pipeline without  
28 being in the field, but allow us to look at terrain  
29 units in terms of how much disturbance activities  
30 we'd create. Of course we looked at other things and



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1 I am speaking of other people since I was not directly  
2 involved in this, but we looked at the contours of the  
3 ground and of course other things other than from  
4 photo interpretation, but terrain sensitivity is  
5 one of the first measures we have of laying the  
6 line over the mosaics in order to allow us to  
7 direct the pipeline route.

8 Q Do I take it that you  
9 are talking about work that other  
10 people did and that you did not do yourself?

11 A No, I did not actually  
12 lay a line on the mosaic, but I was brought up to  
13 date on these activities periodically as they were  
14 carried out in the normal course of our work

15 Q Who was selecting the  
16 line that was being laid out on the maps?

17 A Well, there were a number  
18 of people involved and the first element would be  
19 Mr. Drew doing his terrain sensitivity units in a  
20 corridor which was originally defined by Mr.  
21 Fawcett. Following this Mr. Fawcett would look  
22 at<sup>these</sup> terrain sensitivity units and have an  
23 appreciation of them as well as other factors so that  
24 he could then direct his line on the mosaics. Now,  
25 again, I am talking of the preliminary activities.

26 Following this, the  
27 field work which is ongoing currently and which has  
28 been going on over the last several months involves  
29 actual on the ground investigation by geotechnical  
30



1 people.

2 Q I appreciate that, sir,  
3 but my question specifically is about the terrain  
4 sensitivity rating that was done and I want to know  
5 how that tool, if you like, was employed and by whom,  
6 and I want specific examples. Now, do I take it  
7 that because of your overall supervisory position  
8 you weren't involved in the mechanics of its imple-  
9 mentation?

10 A Only insofar as I  
11 was supervising the people who did the work.

12 Q Well, who should I  
13 be asking then, sir? Mr. Fawcett hasn't been able  
14 to tell me of any specific instances where this  
15 led to route changes. Now, who should I be directing  
16 the question to?

17 A Well, I think Mr. Fawcett  
18 is the right one, but you are asking for a specific  
19 instance and what one gets when one looks at a mosaic  
20 is an appreciation of the general terrain. If  
21 one tried to go through the least sensitive terrain  
22 it might be a very zigzag line which is impractical.

23 Q Mr. Gillespie, first  
24 just a point of clarification. On page 31, the  
25 paragraph beginning "In 1972 ...", you are speaking  
26 about a test hole drilling program that extended north  
27 to Tuktoyaktuk and you say it followed CNT line  
28 through the entire drilling program and as such was  
29 within five to ten miles of the Foothills corridor.

30 I don't -- I am not to take



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1 from that that the Foothills corridor extends up to  
2 Tuktoyaktuk, am I ?

3 WITNESS GILLESPIE: That  
4 is correct. Really I think that it probably should  
5 have read as far as Inuvik.

6 Q Could you speak into  
7 the mike, please, sir, I don't think that you are  
8 coming through too loudly.

9 A Yes, that sentence  
10 is poorly structured. It really should read,  
11 "The drilling program followed the CNT line as  
12 far as Inuvik." and not to Tuktoyaktuk.

13 Q Sir, turning to page  
14 32 in answer to question 50, item 2, you talk  
15 about slopes that were studied in your office study  
16 of the route. Sir, has a photogrametric study  
17 of slopes been undertaken?

18 A Well, this is an  
19 actual ground measurement of slopes at the various  
20 crossings.

21 Q Would this just be  
22 at stream crossings, sir?

23 A No, this would be in  
24 the area where we would prefer to have our pipeline  
25 crossing, right in the vicinity of the crossing to  
26 determine just what the range in the slopes are.

27 Q Do I understand correctly  
28 in your answer to question 50 that what you are  
29 describing here is firstly an office study of the  
30 route, which was your initial review consisting of



Drew, Fawcett, Mirosh  
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1 an office study of the route and in this answer that  
2 is what you are dealing with?

3 A That is correct, yes.

4 Oh, I am sorry -- yes

5 Q Bearing i n mind  
6 your later testimony deals with reconnaissance  
7 trips and so on, sir, I just wanted to know  
8 whether I had understood that correctly.

9 A Yes, what we are trying  
10 to do here is we are trying to locate the --  
11 I am sorry, this doesn't really apply to river  
12 crossings. This applies to terrain along the pipeline  
13 and if as originally located the pipeline was on  
14 the side of a steep slope, then we would relocate  
15 it to where the slope is flatter -- the cross slope  
16 or the slope along the pipeline.

17 Q And the step that  
18 you are outlining in answer to question 50 relates  
19 to an office study or office work?

20 A Right.

21 Q Sir, can you tell me  
22 how it is that you are able to study river crossings  
23 in the office? I am thinking specifically of  
24 such matters as river bank erosion and scour.

25 A I think that we really  
26 were looking at photographs and trying to determine  
27 on the photographs where the best crossing would  
28 be. If the river sort of was scouring at the side --  
29 at the edge of slope where you could see that the  
30 river was directed against the toe of the slope then



Drew, Fawcett, Mirosh  
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1 we'd probably look at this, we'd pinpoint that to  
2 inspect it closely in the field during the first  
3 field reconnaissance.

4 Q Well, you'll agree with  
5 me, will you, sir, that in the office it is  
6 pretty difficult to get to much of a level of detail  
7 in studying river crossings?

8 A That is correct.

9 Q Well, you go on in  
10 your evidence at page 33 to deal with the first  
11 reconnaissance trip that was done in January of  
12 1975 ?

13 A Yes.

14 Q The point I want to  
15 make, sir, I think perhaps you make it a little  
16 later on page 34 in the first full paragraph, is  
17 that January is not really a very good time to do  
18 a reconnaissance of the pipeline route along the  
19 Mackenzie Valley?

20 A No, it isn't, but at  
21 least it gives you a very good indication as to  
22 where you should be studying in the future and this  
23 was -- really we wanted to pinpoint areas where we'd  
24 be looking at the crossings and the general terrain  
25 in more detail during the summer or spring reconnaissance.

26 Q But in January in this  
27 part of Canada you have got a real serious problem  
28 with darkness and snow cover and ice and cold and  
29 so on.

30 A Yes.



1 Q I mention that because  
2 of your comment that the pipeline route and the  
3 major crossings were closely checked and some revisions  
4 were made and I suggest that it is pretty difficult  
5 to do it under the circumstances that are prevailing  
6 at that time of the year.

7 A Well, several of the  
8 crossings were closely checked, by this I mean that  
9 we did do some taping and measuring of the slopes  
10 in the vicinity of the crossing. We could not  
11 inspect the crossings as closely as we'd like to  
12 for evidence of instability, etc., and this is  
13 why I say we went back and looked at them again  
14 later on.

15 Q Yes, sir and on  
16 page 34 you refer to that second reconnaissance  
17 that was conducted in May and June?  
18  
19  
20  
21  
22  
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Mirosh, Fawcett, Bouckhout  
Gillespie, Drew  
Cross-Exam by Marshall

1 Sir, with you on that reconnaissance was there a quali-  
2 fied river engineer or a river hydrologist?

3 A No.

4 Q Who did the assessment  
5 of the rivers and the river crossings proposed by  
6 Foothills?

7 A The assessment was done  
8 by Unies. You might direct this to Mr. Mirosh, but  
9 I think --

10 WITNESS MIROSH: I could answer  
11 that one. In the application we were concerned primar-  
12 ily with the two major river crossings to show how  
13 we would approach the design of these, and for those  
14 two Mackenzie crossings, specifically we engaged  
15 Unies Ltd. to generate for us, based on their background  
16 information of the river and the valley such information  
17 as scour data and they had prepared this information  
18 for us. Other crossings, the majority of the other  
19 crossings were visually inspected by our reconnaissance  
20 team, and there were no specific designs either put  
21 in the application or carried out at that particular  
22 time.

23 Q Do I take it then that  
24 Unies Ltd. did not do any field studies in connection  
25 with these reports they furnished you?

26 A Yes, Unies did not get  
27 into the field at that particular time but they had  
28 been in the field on other work at the time, prior  
29 to that time.

30 Q Will their reports be



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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1 included in this list of reports and studies that's  
2 being relied upon by this panel?

3 A They will be part of the  
4 list which would be relied upon by the geotechnical  
5 panel, which will include a representative from Unies.

6 Q The route location team  
7 didn't rely on the Unies work?

8 A No, the Unies work was  
9 generated after we determined both by study of CAGPL  
10 material and other material that we had, where the  
11 locations of river crossings would be, the location  
12 was given to them.

13 Q Mr. Gillespie, just  
14 near the bottom of page 34, there is a statement there  
15 as follows:

16 "The reason for the revision to the Great Bear  
17 River crossing is that the south bank is  
18 located across a slump block or large former  
19 landslide area."

20 I'm just wondering what information you had that led  
21 you to that conclusion?

22 WITNESS GILLESPIE: Just by  
23 looking at it, there were a series of steps down the  
24 south slope, and I suspect these are former slump  
25 blocks and I had this confirmed by Mr. Klohn, the  
26 president of our company, who believes these are also  
27 slope slump blocks.

28 Q I'm sorry, Mr. Klohn,  
29 the president of your company --

30 A Of our company, yes.



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 Q -- also believes as  
2 you do.

3 A Yes.

4 Q I say that, sir, because  
5 my information is that there has been some drilling  
6 recently, and they do not confirm this. I was wonder-  
7 ing whether you had any drill data on which you were  
8 basing this statement?

9 A No, our interpretation is  
10 based strictly on flying around the site and observing  
11 the shape of the ground. We do not have any drill  
12 information at that test site.

13 Q Perhaps I could ask Mr.  
14 Drew if his terrain typing did not show this slump  
15 block that Mr. Gillespie now wants to avoid.

16 WITNESS DREW: I don't remember  
17 that spot specifically.

18 Q Do you still have that  
19 large mosaic that shows this area?

20 A Yes.

21 Q Perhaps Mr. Drew can  
22 just take a look at it.

23 A I have it mapped here  
24 as eroding valley banks, which are unstable salt areas  
25 Do you want me to take time? I could look in my field  
26 notes to see if I had any specific field check at that  
27 spot. Do you wish me to take time for that?

28 Q Well, what I guess we're  
29 interested in specifically is the information that  
30 you would have provided to Foothills which would



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Marshall

1 indicate whether or not there was a slump block at this  
2 particular location

3 A Oh, the information I  
4 provided initially, a pre-field check, where the terrain  
5 types and boundaries are shown on this mosaic.

6 Q Well, do they show a  
7 slump block there?

8 A They show eroding valley  
9 banks, e.v.b.

10 Q You made the designation  
11 over here.

12 A Well yes, that unit  
13 goes right along to about here.

14 MR. SCOTT: Speak into the  
15 microphone here.

16 A Yes. Well, that unit  
17 eroding valley banks goes all the way along the side  
18 here and then there are small areas along the other  
19 side.

20 MR. MARSHALL: Q I see by  
21 that you have "e.v.b.", eroding valley banks on both  
22 sides of the river near the proposed revised crossing.  
23 Is that the same terrain unit?

24 A That is correct. Now this  
25 is the preliminary terrain typing, not revised as a  
26 result of field checking yet.

27 Q Sir, there's a designation  
28 "o.s.f." at the bottom centre of the --

29 A Yes, that "o.s.f."  
30 is old slope failure, according to the Mollard legend ;



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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1 but it also includes old and recent slope failure,  
2 according to his definition. In other words, there are  
3 slope failures and that is not on crossing, it is --

4 Q Well, if you had identi-  
5 fied a slump block at the location of the crossing,  
6 would you have designated it as "o.s.f."?

7 A It depends how large it  
8 was. If it were large enough to -- this is blown up.  
9 We were working on photos of a scale of about one inch  
10 to one mile, and if it were so small that you wouldn't  
11 have room to put a label in it, no, we wouldn't identify  
12 it separately unless we were asked to specifically de-  
13 tail that site.

14 Q Sir, large or small,  
15 if it were right in the place where you wanted to  
16 cross, surely you would designate it.

17 A No, I think you're mis-  
18 understanding my input to this. I was given a  
19 corridor with no line on it. I terrain typed the  
20 whole corridor, I was not terrain typing a line. I  
21 to help  
22 was terrain typing a corridor/in locating a line.

23 MR. MARSHALL: That's fine.  
24 Thank you, sir. That's very helpful.

25 Q Mr. Mirosh, perhaps  
26 I should address the question to you. Could you tell  
27 me how many river crossings Foothills intends to have  
28 final designs done on prior to certification?

29 WITNESS MIROSH: Well, I  
30 can take a guess at it. I recall we have reviewed this



Mirosh, Fawcett, Bouckhout  
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Cross-Exam by Anthony

1 on a number of occasions. I think it might be about  
2 one dozen.

3 Q Is this -- is it intended  
4 that Unies will carry out this work for you?

5 A No sir, we haven't  
6 determined how we would carry out these designs.

7 MR. MARSHALL: Thank you, sir.  
8 I think those are all the questions I have.

9 THE COMMISSIONER: Thank you,  
10 Mr. Marshall.

11 MR. ANTHONY: I find I have  
12 very few questions for this panel. My fellow environ-  
13 mentalist, Mr. Marshall, has asked a great many of  
14 those that I would have normally asked to them.

15 THE COMMISSIONER: Well, Mr.  
16 Marshall waxed eloquently on the subject of the humble  
17 weed last week, so it may be he's getting religious.

18 MR. ANTHONY: I will interpret  
19 that as the influence of Les Williams.

20 I'd like to, though, just  
21 look briefly at the initial route selection methodology  
22 employed without going through all the detailed  
23 steps that have been discussed in the preceding  
24 cross-examination.

25 CROSS-EXAMINATION BY MR. ANTHONY:

26 Q I understand, Mr. Mirosh,  
27 from your printed statement and in answer to questions  
28 by Mr. Marshall that your route was selected in the  
29 period from late 1974 when you started gathering your  
30 staff, to at least prior to May '75 when the route was



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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1 selected and the filing made; is that correct?

2 WITNESS MIROSH: That's correct,  
3 but of course continuing work is on-going.

4 Q Correct, and in that  
5 period of time I think it's been made clear that you  
6 did most of your route selection on the basis of  
7 the available evidence, environmental and otherwise,  
8 that we've called office studies or which you've called  
9 office studies, and some in-house discussions. Does that  
10 fairly represent the process?

11 A That's correct.

12 Q And am I right in saying  
13 that in the area, for example, where your route  
14 varies dramatically with the Foothills route --  
15 and I'm speaking around Travaillant Lake -- that route  
16 selection there would be beyond the scope of the  
17 alignments that Arctic Gas had prepared and that were  
18 available to you at the time.

19 A Yes, that's correct.

20 Q And am I right also that  
21 that route selection was outside the area of study  
22 conducted by the Environmental Protection Board?

23 A I am not certain of  
24 that.

25 Q And I understand that  
26 the laterals to the communities were in areas that  
27 were not even covered by the Geological Survey of  
28 Canada maps. I understand, I think, it's Mr. Drew's  
29 evidence, is that correct?

30 A Well, I see Mr. Drew is



Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
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1 nodding, so I'll agree.

2 MR. DREW: Yes, that is correct.  
3 By that I'm talking about the bng laterals to Yellowknife  
4 and Pine Point.

5 Q And I understand that  
6 as a matter of policy, which is really what your  
7 evidence in chief is outlining to us in detail, that's,  
8 why I have some problem with perhaps getting specific  
9 in questions, that you propose now to do the field  
10 studies in a more detailed type of study that -- for  
11 the reasons you've outlined in your statement.

12 WITNESS MIROSH: Yes, we  
13 not only propose to, but of course we have been  
14 engaged in these and it's a further stage.

15 Q Now, this methodology  
16 of determining your line on an in-house study and  
17 then going and doing the field research is this  
18 a methodology that was imposed on you by the circum-  
19 stances, or is this the method that you propose to  
20 follow as a technique of route selection in the future?  
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Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 A Well, I think  
2 studying the available mapping and photography is a  
3 first step and that is the step that we had taken  
4 here.

5 Q Well, as I understand  
6 it you reviewed the -- you did your office study  
7 and then you selected a route and now you are going  
8 out to do the detailed field study and is this the  
9 way you propose to proceed in any subsequent evaluation  
10 or do you propose to change that methodology in any  
11 way?

12 A Well, the route which we  
13 have presented in our application we feel is to  
14 that stage a feasible route, but it can be improved  
15 upon and we are embarking on improving upon it.

16 Q Okay, I think that I  
17 understand this process that you propose to follow.  
18 I wonder if I may ask Mr. Bouckhout a question then  
19 if I may. I looked carefully at your functions as  
20 supervisor of environmental affairs within this  
21 project as you outlined on page 15 and being concerned  
22 with environmental input, I am obviously very concerned  
23 about your role and function within Foothills and  
24 as supervisor I gather you recognize and interpret  
25 your function as the environmental spokesman within  
26 the decision making structure at Foothills?

27 A Within the structure  
28 of Foothills in house that is correct. I certainly  
29 don't speak to policy, per se.

30 Q But I imagine that your



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Marshall

1 environmental consultants and advisors will be reporting  
2 to you and you will be in the meetings when questions  
3 of route selection and other questions pertaining  
4 to this pipeline route are decided or considered?

5 A As a general case that  
6 is correct. Our environmental people, our consultants,  
7 etc., obviously do report to me. They do also of  
8 course liaise with other people within the organization  
9 within Foothills with other consultants. They certainly  
10 don't go through me for all liaison functions, but  
11 as far as reporting function, that is correct.

12 Q Well, my one concern  
13 is that I note from your biographical note that  
14 you're also enrolled as a student at the University  
15 of Calgary. Do I understand that your function  
16 within Foothills is a part time function as super-  
17 visor of environmental affairs?

18 A No, sir, not so. The  
19 program that has been established at Calgary is a  
20 very new one, has specifically been established for  
21 people who are in the fulltime working force.

22 Q I see, so you are going  
23 to be a student sort of in addition to your  
24 function in Foothills?

25 A Well, sir, I find  
26 that when I initially enrolled in the program, I  
27 bit off more than I could chew and as a result I  
28 have been unable over the last several months to  
29 take any courses at all, so I am holding that in  
30 abeyance for now.



1 Q You are satisfied  
2 that the environmentalist's voice will come in loud  
3 and clear within the Foothills' decision making  
4 structure?

5 A I certainly am, sir.

6 Q Well, I am with you  
7 on that.

8 THE COMMISSIONER: Even  
9 without the benefit of the M.N.S.

10 A I believe so, sir.

11 MR. MARSHALL: That may  
12 be a help.

13 A I have six years to  
14 complete the program, by the way.

15 MR. MARSHALL: That is all  
16 the questions that I have, Mr. Commissioner, thank  
17 you.

18 CROSS-EXAMINATION BY MR. BELL:

19 Q Before I begin, on  
20 behalf of Mr. Gamble and myself I'd like to express  
21 our appreciation to you, sir, and to Commission  
22 COUNSEL for the kind remarks made earlier and I would  
23 express the hope that at the turn of our next  
24 decade we will be found in a different forum.

25 MR. MARSHALL: Was that a  
26 different form or a different forum?

27 MR. BELL: Take your pick.

28 THE COMMISSIONER: A different  
29 phase I think you meant.

30 MR. BELL: Q Mr. Mirosh,



1 at page four of your evidence you mention the fact  
2 that your selection of the route departed from the  
3 original of the study group, I believe in that it  
4 avoided trapping areas to the south of Travaillant  
5 Lake and to the south of the Mackenzie River. I  
6 was wondering if you could indicate on the map behind  
7 you in a general way where those trapping areas  
8 are.

9 WITNESS MIROSH: Yes, I could,  
10 but I will pass that one to Mr. Bouckhout, who I am  
11 sure could do it better.

12 WITNESS BOUCKHOUT: I  
13 might say initially that this information was primarily  
14 I believe taken from the Arctic Land Use Information  
15 Series.

16 As I recall in the region  
17 of Travaillant Lake these trapping areas are primarily  
18 in this area here. I believe -- I don't know  
19 what the actual direction is here, but it is generally  
20 here.

21 Q What would be the  
22 milepost on the pipeline and just above that.

23 A The mile post in our  
24 pipeline?

25 Q Yes.

26 A We are, I believe a  
27 bit away from the general trapping areas in that  
28 region, however, the applicable milepost would be  
29 somewhere in the range of 160, 170 -- approximately  
30 140 to 170, I believe somewhere in that range.



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Bell

1 Q Yes, and the other  
2 trapping areas south of the Mackenzie River?

3 A The trapping area that  
4 was indicated south of the Mackenzie River lies in  
5 this lake complex here in the corner of the confluence  
6 of the Liard and Mackenzie Rivers.

7 Q And what mile post  
8 would be nearby?

9 A Nearby would be milepost  
10 690, 700, 710, -- in that range.

11 Q And I take it that  
12 these trapping areas were avoided because that is  
13 a major environmental concern of yours?

14 A We look upon  
15 trapping areas, sir, as being a socio-economic  
16 concern more so than an environmental concern.

17 Q Are you aware of  
18 any other trapping areas between milepost 170 and  
19 milepost 690?

20 A I am not aware of very  
21 specific sites. I am aware sir, that there are  
22 maps that have been prepared of trapping areas  
23 and traplines specifically. We have requested copies  
24 of these maps but as of yet have not been able  
25 to get them.

26 Q I see and I take  
27 it then that if you found other trapping areas  
28 in the vicinity of the pipeline, you would recommend  
29 that the pipeline skirt them too, would you?

30 A That would certainly



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Bell

1 depend, sir on the import of the traplines. I might  
2 say that in looking at the issue of traplines we  
3 really look at it from two different points of  
4 view, certainly from a socio-economic point of  
5 view the panel which will discuss that particular  
6 subject field will go into that perhaps a bit more  
7 deeply, but also, I might say that we would try  
8 wherever possible to avoid any areas which are  
9 characterized by significant and important concentra-  
10 tions of fur bearers, and in so doing, sir, it is  
11 coming in sort of through the back door, I think  
12 we would, by doing that, avoid a number of the  
13 trapping areas as well.

14 Q But as yet you  
15 haven't been able to identify any of those areas?

16 A Identify which areas is  
17 that, sir?

18 Q The areas you just  
19 mentioned, significant areas of furbearers.

20 A We have certainly  
21 identified the significant areas of fur bearers  
22 as they apply and as far as the environmental input  
23 into this is concerned I think perhaps the environ-  
24 mental panel should speak to that in the future.

25 Q Thank you. Mr.  
26 Fawcett, at page 12 of your evidence.

27 YOU say in answer to question number 20 concerning  
28 a couple of compressor stations which were moved,  
29 one that was originally near the community of  
30 Fort Good Hope, you say, "...a request to relocate



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Bell

1 was accepted and a new site located six miles south  
2 of the town." Can you tell me by whom the request  
3 was made to relocate?  
4

5 WITNESS FAWCETT: It  
6 was initiated by myself, in discussions with Mr.  
7 John Ellwood of our company we decided that it  
8 fell just on the north side of the Hare Indian  
9 River and considered that a further location would  
10 be suggested and it was requested to the hydraulic  
11 department and they reviewed and suggested that  
12 we could move it.

13 Q I see, and the second  
14 compressor station in the vicinity of Fort Simpson,  
15 you say that a request was also made to move it,  
16 did you also make that request?

17 A We did, yes, in  
18 consultation with the operations and maintenance  
19 department we considered that for accessibility  
20 it would be better if we could move it to the  
21 south side of the Mackenzie River.

22 Q I see, and in either  
23 of these cases did you consult with the settlement  
24 council or the band council in either of these  
25 communities?

26 A I did not at the moment,  
27 no.

28 Q And on page 7 of your  
29 evidence there is a list of items there, item number  
30 6, these are the criteria, I believe, which  
are applied to route selection and number six is



Drew, Fawcett, Mirosh  
Bouckhout, Gillespie  
Cross-Exam by Bell

1 considerations given to route fairly close to  
2 communities for serviceability or at a greater distance  
3 for socio-economic impact reasons, and as I look  
4 at the map on the wall I see that all the communities  
5 marked on there seem to be pretty close to the  
6 pipeline. I was wondering if you could give me an  
7 example of the second consideration here, the location  
8 of the pipeline at a greater distance from the  
9 communities for a socio-economic impact reasons.

10 A I believe on the  
11 review of the middle 400 miles that we had use of CAGPL's  
12 application, it was our consideration that it was  
13 a reasonable distance away from the communities  
14 and we accepted that as a general condition for  
15 the route.  
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Mirosh, Fawcett, Bouckhout,  
Gillespie, Drew  
Cross-Exam by Bell  
Cross-Exam by Lane

1 Q So you are essentially  
2 applying Arctic Gas's standard so far as reasonable  
3 distance is concerned.

4 A Until proven otherwise,  
5 that was our position at the time.

6 Q Was it ever proven  
7 otherwise?

8 A We had one occasion  
9 which has arisen which may create a possible re-  
10 location at Fort Good Hope. This has not been carried  
11 forth as yet.

12 MR. BELL: Well, those seem to  
13 be all the questions I have, sir.

14 THE COMMISSIONER: Miss Lane?

15  
16 CROSS-EXAMINATION BY MISS LANE:

17 Q I have only one question  
18 to ask, and this I'd like to ask, I think, of Mr.  
19 Fawcett. On page 7 of the evidence you indicate that  
20 two considerations you used in selecting your route  
21 were access to existing transportation systems and  
22 also you took into consideration socio-economic impact.  
23 I was wondering in the Mackenzie Delta area, particularly  
24 around Inuvik and Tuktoyaktuk, Mr. Blair indicated that  
25 you would be using the existing transportation systems  
26 that are being put forward by the producers and their  
27 producer application. At the time when you were  
28 considering it, are you aware of that?

29 WITNESS FAWCETT: I'm not at  
30 the moment, no.



Mirosh, Fawcett, Bouckout,  
Gillespie, Drew  
Cross-Exam by Lane

1 Q You're not aware of  
2 that, you're not aware which existing transportation  
3 systems are going to be put forward by the producers  
4 in their producer application?

5 A Not as yet.

6 Q So you would also not be  
7 familiar with any concern that such communities as  
8 Tuktoyaktuk might have for the use of barges in the  
9 area, particularly the use of barges in Husky Lake,  
10 or I believe you called it Eskimo Lake.

11 A I am not aware of it,  
12 but I assume it will be dealt with in the socio-economic  
13 panel, and that would be taken by Mr. John Burrell.

14 Q But it's not some of the  
15 information that came to your attention while you were  
16 selecting the route in that area?

17 A It was not brought to  
18 my attention at that time, no.

19 Q Is anybody else on the  
20 panel aware of that?

21 WITNESS MIROSH: I think that  
22 possibly we're not aware of it. But I would say that  
23 as a matter of general rule we would try and use  
24 existing facilities as much as we could in the area,  
25 providing that that did not contravene such things  
26 as environmental concerns, socio-economic concerns.

27 Q Well, I know you check  
28 out, or at least you said that you check out your  
29 own facilities with the communities that you propose  
30 to go close to. But do you as a matter of policy or



Mirosh, Fawcett, Bouckout,  
Gillespie, Drew  
Cross-Exam by Lane  
Cross-Exam by Scott

1 a matter of -- do you check out facilities of others  
2 that you are going to use to find out how communities  
3 are already reacting to them?

4 A Well, in a sense we do  
5 in that we have looked at existing community wharf  
6 installations and considered whether we would use  
7 these or not; but we have not really concentrated on  
8 Tuktoyaktuk specifically.

9 MISS LANE: That's the only  
10 question that I have.

11  
12 CROSS-EXAMINATION BY MR. SCOTT:

13 Q Mr. Mirosh, could you  
14 first of all tell me when Foothills began the process  
15 of route selection?

16 A I would say within several  
17 weeks of announcing the formation of Foothills.

18 Q And just professionally,  
19 when would that be?

20 A Well, I may be wrong  
21 but I think it was about September of last year.

22 Q Yes, and have you been in  
23 charge of the exercise since that time?

24 A Insofar as the engineering  
25 portion goes.

26 Q Yes, but are you the man  
27 who is primarily in charge of the route selection team  
28 and the input to it? Who is the head man in route  
29 selection?

30 A Well, it's a team effort



Mirosh, Fawcett, Bouckhout  
Gillespie, Drew  
CrossExam by Scott

1 and everything that we attempt to do, but if you're  
2 asking for a hierarchy, then Mr. Fawcett reports to  
3 me and I in turn report to Mr. Hushion.

4 Q Well now --

5 THE COMMISSIONER: Mr. Scott,  
6 it's 4:30. Would this be an appropriate time to  
7 adjourn?

8 MR. SCOTT: I'm entirely in  
9 your hands, sir.

10 THE COMMISSIONER: Well, we've  
11 got -- I think we'll adjourn until nine in the morning  
12 and I'll deliver my ruling on the matter that Mr. Gibbs  
13 raised at nine in the morning, and you can carry on  
14 with these gentlemen then.

15 (PROCEEDINGS ADJOURNED TO AUGUST 22, 1975)  
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